MARINE CORPS **Gazette** JUNE 1945 30c

THIS MONTH'S COVER

The Flag Goes Up on Mt. Suribachi

The bos'n of the landing craft pointed to the bleak hill on desolate Iwo Jima. "See that spot of red on the mountainside?" he shouted. A radioman said, "A group of Marines are climbing up to plant our flag up there." The press association man grabbed his camera and started toward the hill. . . .

* * *

This cover completes the set of eight four-color reproductions of paintings by two nationally known magazine cover artists: Staff Sergeants Tom Lovell and John Clymer. Reprints of the complete set depicting historical scenes from Marine Corps history are available to MARINE CORPS GAZETTE readers until the supply is exhausted. The set includes:

The Korean Incident—1871; The Florida War—1836; Belleau Wood—1918; The Boxer Rebellion—1900; Suppressing African Slave Trade—1843; Apprehending Seal Poachers—1891; The Capture of the Reindeer—1814; The Flag Goes Up on Mt. Suribachi —1945.

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THE MARINE CORPS **Gazette**

Professional Magazine for The United States Marines

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THE MARINE CORPS
THE PROFESSIONAL MAGAZINE
FOR UNITED STATES MARINES

Gazette

JUNE 1945

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NEXT MONTH IN THE GAZETTE

¶ Mainly because of this war's new type of amphibious operations, maps have assumed tremendous importance. In next month's GAZETTE, "Maps for the Fighting Forces," by C. Lester Walker describes how maps are helping to win the war and tells of new developments in map-making which help remove the element of chance from our operations.

¶ Captain Miles R. Browning, USN, whose article "Pacific Strategy" appeared in the March issue of the GAZETTE, discusses a timely subject in "Basic Concept of the Task Force," to be published next month. Captain Browning served as chief of staff for the task force commander in the Gilbert and the Marshall Islands invasions, and his article reflects this experience.

¶ The satisfaction expressed by Major I. N. Kelly when he saw his men smash a strong Jap attack on Saipan, as told by him in his article "Training a Regimental Weapons Company," in next month's GAZETTE, is understandable. It was the payoff for months of hard training. The form that this training took, and the ideas behind it, are described by Major Kelly in a way that will interest Marines.

¶ Captain Thomas A. Watson, of Marine Corps Schools, Quantico, has prepared for GAZETTE readers "Advance Fields for Artillery Spotting Planes," scheduled for next month. Telling how the value of observation planes is enhanced when they can operate from fields close to the scene of operations, the article describes how fields should be selected and utilized, and discusses planes and personnel involved in such operations.

¶ With logistics playing such an important part in this war, excessive waste of equipment is an especially serious problem. In his article "Salvaging Equipment," to be published in June, Major J. A. Donovan, Jr., outlines a plan for conserving vital supplies by instilling a greater feeling of responsibility for combat equipment.

★ ★ ★

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Amphibious Strategy

"Today we are truly writing the naval textbooks of tomorrow," Admiral King declared. This article describes developments in amphibious operations which have revolutionized warfare. *By Stefan T. Possony*

WHILE in 1940 the Germans proved incapable of crossing the Channel, British and American forces crossed the Channel in 1944. While in 1941 the Japanese were unable to strike at the western coast of the United States, American forces in 1945 took Iwo and Okinawa and thereby had crossed the Pacific Ocean. In the long series of battles from Dunkirk to the Ryukyus Anglo-American forces conceived, developed, and perfected the technique of amphibious or triphibious operations. Combined operations in their present form constitute the most important and consequential novelty in the art of war. The future historian will have to acknowledge that this revolutionary change in warfare largely originated with the U. S. Navy and Marine Corps, although the British claim to have pioneered in landing craft, and their contributions have been very great indeed.

Modern weapons have made the power of the defensive so strong that, before the war, opposed landings on hostile shores and subsequent offensive operations from precarious beachheads were considered as absolutely impossible. In point of fact, there is no historic precedent for modern large-scale landings against strong coastal fortifications. Although innumerable "overseas expeditions" are recorded in history, most if not all successful landings were carried out on practically undefended shores. "In former times," says Admiral King, "landing on an enemy shore was a fairly simple matter. Those afloat had more mobility than those ashore. The classic technique was to fool the enemy by a surprise landing where his defenses were weak or non-existent." The Mongols, for instance, who failed twice to fool the Japanese, were compelled to reembark.

British Landing Operations

The British, who by reasons of geography must fight either purely naval or amphibious wars, usually secure continental Allies in whose ports they can safely land. Only when they were allied with countries like Portugal, Spain, France, Belgium, Holland, Greece, and Turkey could the British make a major military effort on land. Whenever the British had to resort to opposed landings—Quebec, Holland in the Revolutionary Wars, Aboukir, Calabria, Walcheren—they either landed small forces in a peripheral theater of war, or they failed. Landings in the Crimean War remained unopposed, although the British were prepared to meet strong resistance. The Dardanelles, the greatest amphibious operation of the First World War, was a costly failure. Yet it was merely a cautious substitute for more ambitious landing projects which never materialized, as for instance Lord Fisher's plans against the German Baltic coast.

← Overwhelming naval power at Iwo doomed this strongly defended island fortress.

German Success Emphasized Hazards

In 1917, the Germans landed one division on the poorly defended Russian islands of Dago and Oesel. The expedition was covered by not less than ten battleships plus several cruisers and many destroyers. The operation precipitated the collapse of the Russian army. Nevertheless, at least three German battleships suffered mine damage and the naval forces were hastily recalled before completion of their mission. Thus, this enterprise which was executed under ideal conditions, served to stress the hazards rather than the feasibility of amphibious operations.

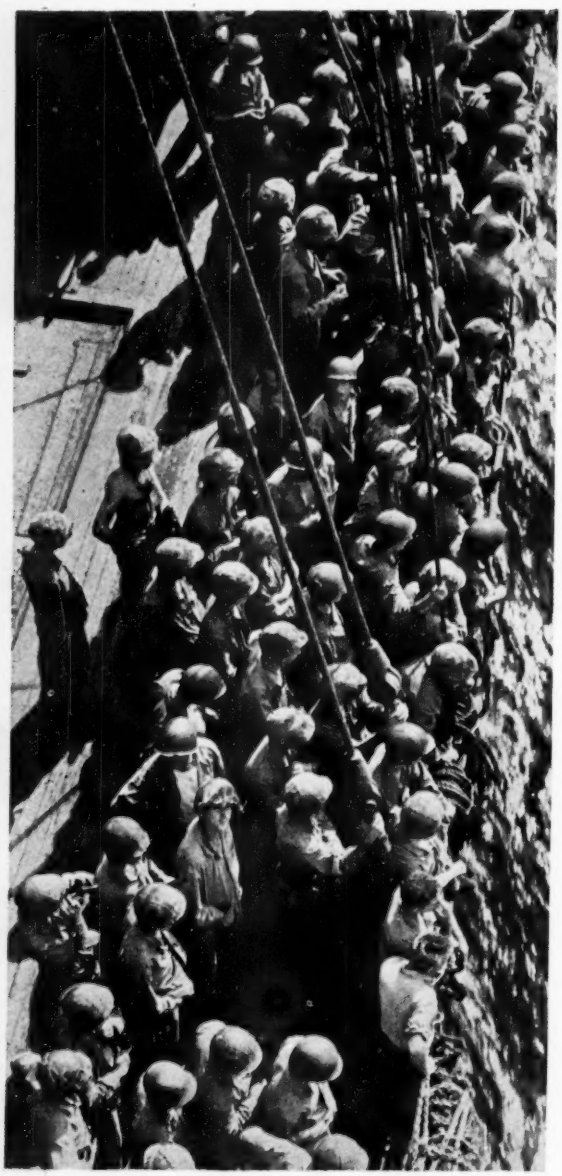
The Japanese enjoyed the reputation of being "masters in amphibious warfare." It is true that they frequently resorted to landing operations, even in the feudal wars fought in their home islands. Yet while their operations against the Russians in 1904 were remarkable for the fact that they were initiated before command of the sea had clearly been established, the Japanese never were compelled to operate frontally against strong coastal defenses, backed up by adequate numbers of troops and modern weapons.

Prior to the outbreak of the present war, it was believed that modern armaments would make large-scale amphibious warfare even more difficult than it had ever been in the past. It was assumed that air forces of only medium strength plus minefields, submarines, small naval weapons, obstructions, coastal artillery, and torpedo tubes could prevent even the strongest fleet from approaching the coast. By these defensive means the troop transports could be destroyed practically at will. The master of the sea, however great his naval strength, could under no circumstances extend his command to the enemy's coastal waters.

Odds Against the Naval Force

Naval guns were supposed to be inferior to land guns. Should the coastal guns be engaged by a superior number of heavier naval guns, the warships could not stay long enough close to shore to overpower the land defenses.

Amphibious forces were given little chance to



Troops—in quantity—must travel to their far off beachhead with sufficient protection.

win air supremacy, because their aircraft must either be carrier-based or operate from great range. The forces afloat would therefore be deprived of aerial protection, while the ground troops would also lack tactical air support. The defender enjoying aerial supremacy would pass all tactical advantages provided by air cover and gain accurate information about all movements of the amphibious forces. Hence no tactical surprise would be possible. Movements from ship to shore were considered as tactically impossible. Troops in landing boats were expected to be unprotected against fire from the coast. They would be unable to return the fire, or to land equipment necessary to defeat the enemy on the beach.

It was also doubted that even with good and secure beach conditions unloading could be effected with sufficient speed to permit the consolidation of a beachhead. The unloading of heavy material, including tanks, on open beaches was believed to be out of the question, and the capture and rebuilding of a port could be so much delayed that the defender would have enough time to mount a counterattack with sufficient strength to crush the beachhead.

The defending army would thus enjoy all advantages of tactical initiative, speed of movement, and superior strength. The attacker would be incapable of exploiting his beachhead by an offensive.

Failure Might Mean Defeat

Even under exceptional circumstances major landing operations would entail such losses of irreplaceable warships, of transport and cargo vessels, planes, and all other kinds of equipment and supplies, and of troops at sea and on shore that failure in a landing expedition would mean the crippling of the attacker's sea power, an irreparable weakening of his land and air forces, and possibly be tantamount to his over-all defeat.

The Germans shared this belief and in 1941 turned against Russia with the firm conviction that the Channel would provide adequate protection for their rear. "I prophesied . . . that wherever the British set foot on the Continent, they would be attacked by us and driven into the sea," exclaimed Hitler in May, 1941, six weeks before the last manifestation of the *Drang nach Osten* materialized. Later he even invited the British to tell him where they wanted to land on the European coasts, so that he might evacuate the landing area and permit the British Army to get ashore unmolested. Yet in 1945 Admiral King could declare: "Amphibious operations have initiated practically all of the Allied successes."

The Royal Navy and the U. S. Navy had never denied the feasibility of landing operations. The British Admiral Keyes pointed out that the main advantages of sea power could be reaped only by landings on enemy shores. In the United States the mere existence of the Marine Corps—a military organization without parallel in any other country—reveals the Navy's positive attitude to amphibious warfare. After all, *amphibious warfare is the natural form of war for an island-continent.* However, it is only fair to say that nobody ever visualized amphibious operations on the present gigantic scale.

Essentially, the problem of amphibious warfare boiled down to the question whether landing forces could be provided with fire power superior to that of the defender and whether landing formations could be protected during their ship-to-shore and their initial shore movements.

While at first it was believed that amphibious warfare required merely the solution of tactical

problems and the construction of special equipment, it soon appeared that landing operations cannot be carried out unless certain *strategic* conditions have been established previously. Every single feature of land and naval tactics had to be adapted to the particular difficulties of ship-to-shore operations.

What are the strategic conditions of amphibious operations?

1. Absolute command of the sea. The enemy's naval power must have been annihilated, or it must be unable to break through the attacker's naval cover. Command of the sea guarantees safe passage of the transports, cargoes and landing craft, makes possible the operations of small and specialized naval weapons to remove minefields and obstructions, and permits supporting major units to stand close to shore for an indefinite period of time.

2. Air mastery. The enemy's air forces must have been seriously weakened and be unable to defeat the attacker's air power, land or naval. They must be kept away from the fleet, the landing craft, transports, and supply vessels, and from the beachhead.

3. Exercise of air mastery. The attacker's planes must support the ground and naval forces by bombing special targets, including fortifications and gun emplacements, by strafing enemy positions and by impeding the enemy's maneuvers on the battlefield. The most important mission of the attacker's bomber and fighter bomber force is, however, the strategic isolation of the battlefield. Upon the successful accomplishment of this mission both consolidation of the beachhead and exploitation of the landing depend.

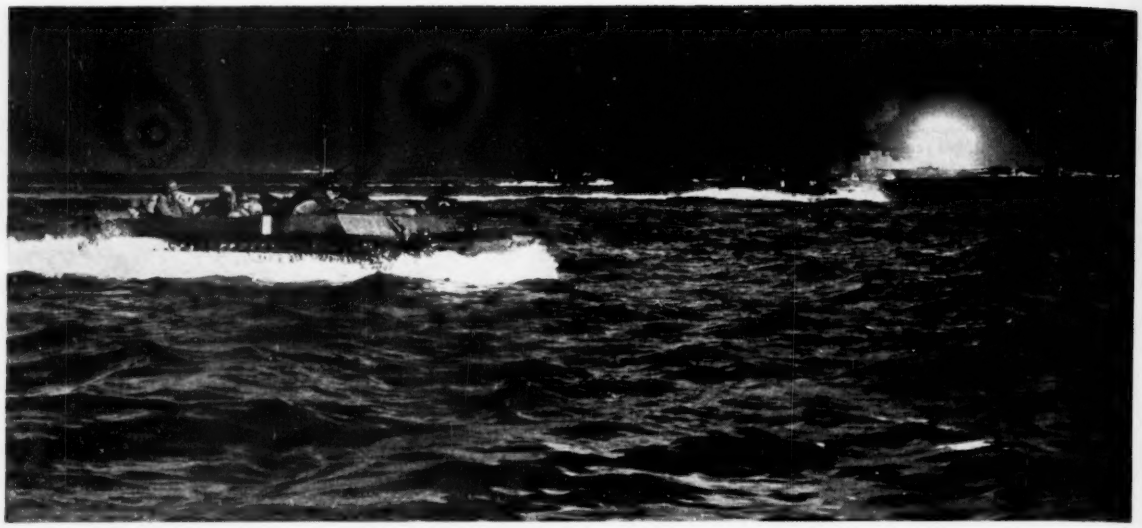
4. Element of surprise. Even under favorable conditions, landing operations are so difficult that without surprise they will either fail or be very costly. The chief objective is to avoid the enemy's main forces. Several means must be employed to attain this goal. While maintaining effective air reconnaissance over the enemy's positions, the enemy must be prevented from getting information about location, size and composition of the amphibious forces, their movements, and time and direction of approach. Diversionary movements, and unfavorable weather are among the usual deception devices.

5. Adequate landing material. The necessity of such equipment requires no special explanation. It is, however, necessary to point out that landing equipment is needed in very specialized forms, adapted and adaptable to meet particular beach conditions. The U. S. Navy has developed more than five dozen special landing ships and craft, including assault boats and amphibious vessels suited for land combat, and land vehicles waterproofed by ingenious methods, to make possible frontal assaults against defended beaches without excessive loss. The most difficult aspect of landing operations is the working out of a tactically sound

Supplies—in quantity—must follow troops closely, quickly, with adequate protection.

timetable which provides for an effective sequence in the attack, the strict adherence to this timetable in spite of resistance and weather, and mutual support and cooperation with offshore warships and the air force.

6. Speed. Without speed, strong counterattacks cannot be prevented. Inadequate speed may therefore lead to the collapse of the landing. To achieve the required speed, it is necessary to use swift landing craft, parachute and airborne troops, to conduct the initial beach combats with mechanized equipment, to build airstrips and, above all, to use special loading and unloading techniques, which must implement the tactical plan. The unloading must be carried out over open beaches and through dock



Heavy guns from heavy ships pave the way for the first assault waves at Okinawa as loaded landing craft streak for a beach that fleet and air arms have worked over.

ships, floating piers, causeways and sometimes artificial harbors. A port must be seized as early as possible and facilities must be available for quick harbor repair. Pipe lines will be used for the distribution of fuel, and transport planes for the unloading of critical material. Supply operations must be so planned that even the loss of certain ships does not cause any delay. Finally troops must get ashore in sufficient quantity and launch an offensive before the enemy can reform and prevent exploitation.

Landing Lessons We Have Learned

These are the lessons which were learned in a series of landing operations since 1942. Landings which encountered difficulties were particularly instructive. Guadalcanal drove home the importance of sea and air mastery, North Africa the necessity of speed, Sicily the value of exploitation. In Salerno we discovered the consequences of lack of surprise, the function of strategic bombing, the tactical possibilities of heavy bombers and the capabilities of airborne reinforcements. In Anzio we learned that even a landing which cannot be exploited need not end in disaster and that it is very difficult for purely land power to maintain itself within the range of heavy naval guns, supported by air power. The importance of isolating the battlefield and of rapid exploitation were forcefully emphasized. Tarawa and Kwajalein modified our ideas about the volume of fire necessary to neutralize strong coastal defenses.

These lessons were profitably applied during the landing in Normandy, hitherto the greatest and most difficult amphibious attack in history. This operation was undertaken against extremely powerful coastal defenses and strong ground armies, after our forces, in the course of previous campaigns, had established complete mastery of the seas and in the air. Our victory over the U-boat had permitted us to concentrate stronger land forces than the enemy. The bombing offensive had prevented the Germans from fully exploiting Europe's productive capacity and to build up ground, sea and air forces equal to, or stronger than, ours.

However, this operation was greatly facilitated by the fact that it was carried out at short range and under cover of land air forces operating from nearby bases. Another factor facilitating this operation was the continued Russian resistance, made possible in part by our victory over the U-boat and by lend-lease. The Germans were compelled to maintain half of their forces on the eastern front. Strong forces were kept in Italy. Guerrillas in the occupied areas, especially in France, impaired German communications, forced the Germans to disperse their troops and provided our side with reliable intelligence.

One of the chief reasons for the success in Normandy was the tactical surprise which our forces were able to achieve. The attack was launched against points which, on account of their distance from good harbors, the Germans did not consider as likely places of landing. This choice necessitated the construction of artificial harbors, which therefore were not only a condition of rapid unloading and exploitation, but also of surprise. In addition, the preparatory bombing campaign misled the enemy about our intentions while, at the same time, it isolated the prospective battlefield. By bombing road and rail facilities in the region where the bulk of the German army was concentrated, we convinced the Germans that the blow would fall against their main force, while in truth this bombing was intended to immobilize the German army,

(Continued on page 66)

Why Not Copy?

In this article the Military Arms Consultant of the National Rifle Association discusses innovations in foreign arms which we might employ to good advantage in improving our own equipment. *By W. H. B. Smith*

AS THE European phase of the present war enters its closing stage, our attention is focusing on the great struggle still ahead of us in the Pacific. A general survey of foreign developments in the field of small arms, particularly as encountered in Europe, may point the way to developing further our already superb collection of weapons with the idea of increasing their efficiency wherever practicable.

An analysis of the principal German, Russian, and Czech small arms discloses a number of innovations, improvements, and simplifications of design which may prove worthy of copying to improve the effectiveness of our weapons in the Pacific campaigns ahead. This is a particularly propitious time to undertake field experimentation, for large quantities of the very material which has impressed many of our soldiers in Europe are now in our possession.

This article is not intended as a purely personal opinion. It is directly developed from a study of the several hundred letters which reach the National Rifle Association monthly from gun enthusiasts in the field who, as a class, are likely to be considerably above average in their knowledge of the subject of small arms. The following matter, therefore, while it is a direct outgrowth of personal study and observation of the weapons mentioned, also reflects the opinions and the questions in the minds of literally thousands of American soldiers who rank from privates to colonels.

Rifles: There is no rifle in the world today which is superior to our own Garand M1, but the latest German and Russian semiautomatic rifles have numerous design points worthy of our very close attention. For example, there is the new German semiautomatic rifle which they list as the Gew. 43-44. In view of the widely recognized need for a short semiautomatic rifle which will be a more effective brush chopper than our regular carbine, why not give this German weapon a serious field tryout in the Pacific? Quantities of them have been captured in Europe. The necessary manufacturing plants have been or shortly will be captured, so that the original supply is not a matter of particular difficulty.

The element of ammunition need not trouble us particularly, as the British and Australians already use the standard 7.92-mm German service cartridge in their Besa machineguns. We ourselves are well enough set up to manufacture this caliber ammunition. We have already supplied several hundred millions of rounds to the Chinese for use in the German manufactured equipment which they purchased before the beginning of the war.

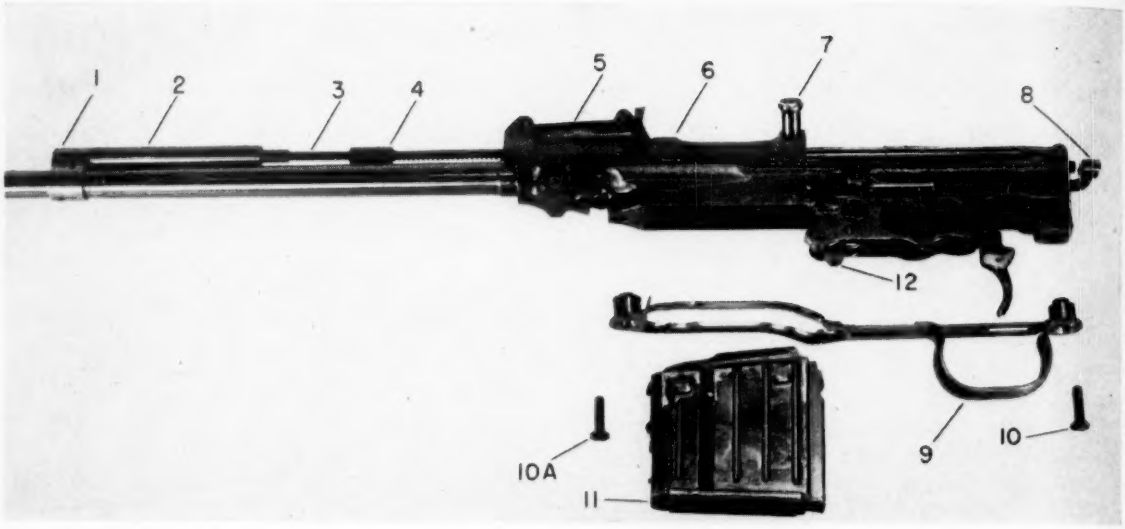
If German weapons in actual field use by our troops prove to be sufficiently effective to warrant the change, shifting over their manufacture from the standard German to our own standard rifle cartridge is a comparatively simple manufacturing process.

Specifically, the Gew. 43-44 has the following outstanding features in its favor:

1. Its design is such that it can be transformed to a carbine with little more attention than sawing the barrel down to the required length. In this weapon, the gas is taken off through a port in the barrel only about 13¼ inches from the chamber. The operating rod works in a straight line above the barrel parallel to the axis of the bore. Woodwork encloses only the rear section of the barrel and the gas mechanism. (The development of a successful compensator and flash hider for this weapon is not particularly difficult, as evidenced by the fact that the Russians issue a carbine of this general design to their Cossacks. Some of the Russian compensators are reported, from tests made in Spain and also from shooting tests made by our soldiers who encountered them in the hands of satellite troops in France, to reduce recoil as much as 50 per cent.)

2. A telescope mount is machined into the re-

German Gewehr 43-44 Semiautomatic Rifle.



Details of German Gewehr 43-44 are shown above. (1) Gas chamber, about 13¼ inches from cartridge chamber. (2) Outside gas piston, mounted over the stationary gas cylinder. Tappet is seated in its forward end. (3) Tappet piece, front end seated in operating rod. (4) Operating rod with its return spring. (5) New strong cast steel receiver. (6) Bolt cover (or slide). (7) Bolt handle which moves straight back without turning. (8) Safety. (9) Stamped trigger guard. (10-10A) Trigger guard screws which are held by locking plungers. (11) Magazine, made by stamping operation. (12) Magazine catch, actuated by a simple torsion spring.

ceiver itself, providing a fixed base to which the short eye relief telescope may be assembled or dismounted in a matter of seconds. This telescope also has the advantage of being parallel to the axis of the bore.

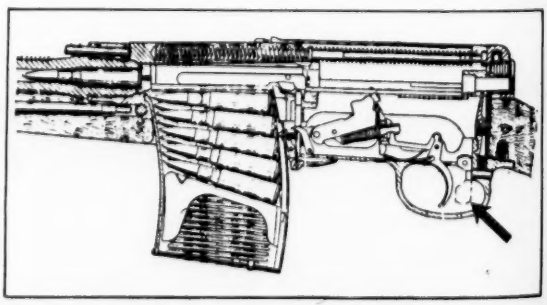
3. This weapon may be loaded with a standard five-shot clip through the top of the action, with loose cartridges through the top of the action, or by insertion of a loaded box magazine through the bottom of the receiver. The capacity of the standard magazine is 10 cartridges, plus one in the chamber. This number, of course, could be increased easily by increasing the size of the magazine box.

4. It is extremely simple to operate, strip and clean.

5. It is simple and cheap to manufacture, employing a maximum of castings, stampings, and a few round machined parts. A new German *cast* receiver is used, which in itself is an item worthy of the fullest attention of our metallurgists. The stock is laminated and bonded wood.

The Germans adopted from the Russians the gas system in this rifle, in which an operating rod on top of the barrel is blown back by action of expanding gas to permit the rear end of the rod to pass through a hole in the top of the receiver operate the action. By utilizing the general locking principle of the German MG42, the Germans were able to overcome the basic trouble of difficult extraction in the Russian Tokarev 40 rifle. The locking system in the Russian rifle uses a bolt, the rear end of which is pulled down and pushed up to lock and unlock.

The operation of the German Gew. 43-44 is simplicity itself. Gas escaping through the barrel port expands in the gas chamber and drives the operating rod straight back, compressing the spring wound around the rod. The rear face of the rod passes through a hole in the receiver to drive back a cast bolt slide (or cover). As chamber pressure drops, a finger on the underside of the bolt slide picks up the firing pin carrier housed inside the cylindrical bolt. This carrier is so shaped that as it moves back it cams locking lugs out of recesses in the receiver walls back into the bolt proper. From that point on the bolt slide carries back the entire bolt assembly to extract and eject, cock the hammer, and compress the recoil spring mounted directly behind the bolt.



Arrow shows selective trigger of Tokarev 40.

Full automatic shoulder rifles: The Russians issue limited quantities of Tokarev 40 rifles with a selective trigger which provides immediate switching from semi to full automatic fire.

The original Russian application of this weapon in full automatic fire was to use it with or without a telescope to lay down a sudden burst of fire on a dim or spread out target. For example, if the sniper could spot a machinegun or battery or mortar crew at long range through his telescope, a sudden burst of rifle fire had a good chance either of knocking out one or more of the crew or at least compelling them to duck and take cover.

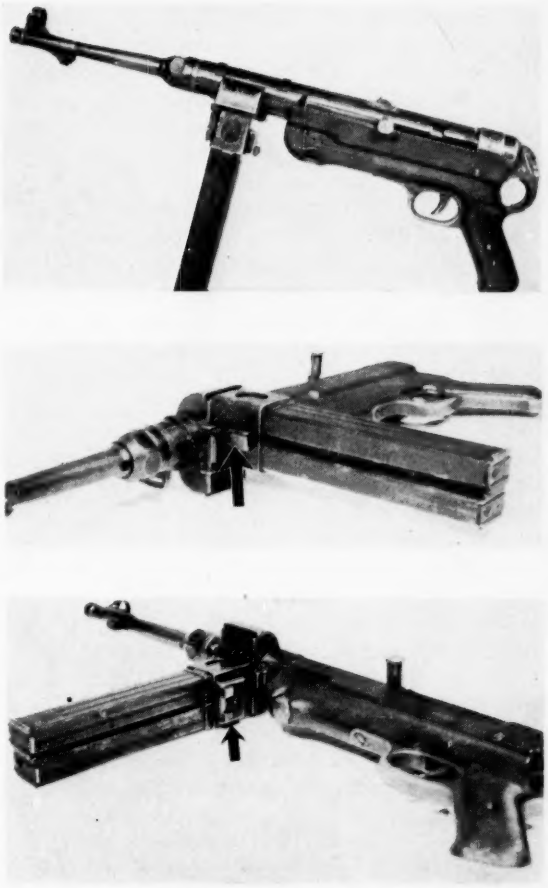
As the use of the BAR and the submachinegun has been well demonstrated in jungle fighting, the ability to throw a sudden burst of slugs into the brush may prove effective against the enemy and also psychologically helpful to the rifleman. The need for such a weapon has been so well demonstrated that the appearance of a full automatic Garand is merely a matter of time.

The Russian Tokarev 40 is particularly noteworthy in that it is provided with the simplest and most robust selective device yet to appear. Externally, this device consists of a simple pivoted lever mounted within the trigger guard directly behind the trigger. The lever is spring supported, and when it is positioned directly behind the trigger, its lower shank effectively prevents the trigger from moving to the rear. When this manual safety is pushed through to the left, its removal from the path of the trigger permits the trigger to be drawn to the rear to release the hammer for firing the cartridge in the chamber. When this lever is pushed through the trigger guard to the right, it not only swings out of its line of interference with the trigger but also brings a machined surface at its top in position to automatically release the hammer immediately upon completion of the locking action. This one simple swinging lever, therefore, not only is the safety but also gives simple and immediate control of semi or full automatic fire. It is noteworthy not only for the simplicity and durability of its design but also because it is positive in operation. This trigger design could be adapted to our own rifle.

Submachinegun: The subject of increasing magazine capacity in submachineguns is one that has been given very serious attention, and which has recently been quite successfully worked out by the Germans.

As is well known, in actual battle practice the large capacity circular drum magazine was discarded by the British, then by ourselves, and finally by the Russians.

A large capacity four-line box magazine was developed several years ago by the Finns. This was originally used in the Suomi submachinegun. While no sample of it has ever come to the United States, for general ordnance study, it is safe to assume that had it been particularly successful, the Russians, who use that submachinegun to a marked degree, or the Germans, who also used large quantities of Suomis, would have adopted it.



German Schmeisser Machine Pistol 40, with 1944 dual magazine system. Center picture shows catch to switch magazines. Magazine withdrawal catch is shown in lower picture.

The new German device is built into the late model Schmeisser machine pistol. It consists of a spring locked movable magazine housing. Instead of the standard magazine holding a maximum of 32 cartridges, this magazine housing will take *two magazines* in parallel position. The magazines are inserted in the housing from below in standard fashion and one is in direct line with the chamber and the bolt. When that magazine has been emptied, pressing in the spring catch in the housing permits the housing to be pushed across in its track so that the second magazine is brought into direct line for continued firing.

The advantages of this system are several. First, it provides 64 cartridges in the gun itself all ready for quick discharge. Second, by providing a definite halt at the end of the firing of the first magazine, it permits replacing that magazine if time allows at the same time that it makes available the second

magazine, should emergency require its immediate use. Thus it provides not only the factors of added fire power, accessibility of ammunition, and exceptional fire control, but also furnishes the gunner with the psychological advantage of having an additional clip ready for quick use in the event of an enemy rush when the initial burst of fire from the first magazine stops. With this type of magazine construction, the overall length of the magazine box is not great enough to interfere with quick and effective shooting from a prone position.

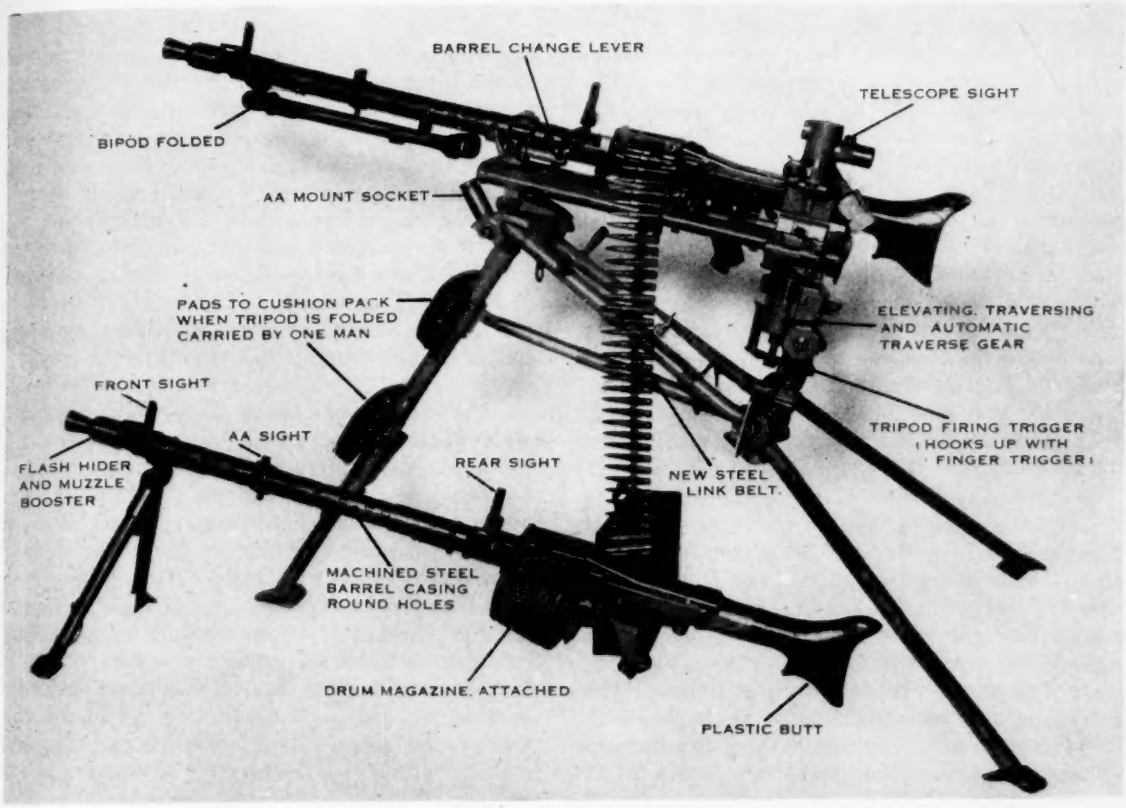
Light machineguns: In view of the huge quantities of BARs in use in our services, it is not practicable at this juncture to switch to an improved form of this weapon. However, for jungle fighting one important addition to it might be the dust cover used on Browning automatic rifles manufactured in Belgium and used by both the Germans and the Japanese. This cover also is found in several Czech made weapons of this type used by the Japs. This device consists of a simple plate leverage arrangement which covers the ejection port. When it is pushed down by the thumb, it covers the bolt completely, excluding ash, dust, leaves, and similar matter encountered in Pacific fighting. If the weapon is carried cocked, this dust cover may also be used to protect the open ejection port. A simple machining of the bolt side provides a camming surface which will automatically open this dust cover either on opening movement or closing movement of the bolt. Thus, while the dust cover *must be closed manually*, it will *open automatically* as the bolt is drawn back to cock or as it goes forward to fire.

A number of Browning automatic rifles captured on the beach at Anzio were fitted with removable barrels. However, the use of a removable barrel in our present version of the BAR is a very difficult thing to achieve mechanically. Still, it must be noted that the light machineguns of every other major power—Russian, British, German, Chinese and Japanese—are all fitted with quick removable barrels; and in most cases with quickly stripped receivers permitting rapid change of firing pins and extractors.

Carbines: The latest German shoulder weapon is a semi or full automatic arm of great simplicity and unusual versatility. It is best known as the Kar. 43-44, but is also referred to as Machine Pistol 44. More recently the Germans have described it as Sturmgewehr, or "storm rifle." Its capacity is given as 30 cartridges. It is made very largely of cheap and simple stampings, employs a top gas takeoff and operating rod, and an unusually simple camming lock. The cartridge employed in this weapon is a standard rifle cartridge case cut down to take a 125-grain bullet with a velocity of about 2,350 feet per second. In the last few months this weapon has been used extensively as a submachinegun. By leaving out the buffer spring at the rear of the bolt, a fire rate of about 450 per minute is achieved, permitting such use. With a buffer spring, this weapon has a firing rate of about 850 per minute, which is entirely too high to be held down very long in full automatic fire. However, the cartridge is accurate and effective up to at least 400 yards. This carbine, used as a semi-automatic weapon within those ranges, is a weapon which must be respected.

Additional interesting features of this gun are a hinged spring loaded dust cover over the ejection port which opens automatically as the bolt travels to the rear, and a well positioned safety lever. This safety lever is mounted on the left hand side of the trigger guard unit. It is arranged so that as the firing hand closes around the stock of the rifle and the firing finger goes through the trigger guard, the thumb is automatically moved into position to press down the safety to disengage it. The only manually operated safety in general use which is superior in design to this one is that found in the Russian Degtyarov light machinegun, in which a squeezer safety is provided directly behind the trigger guard. In this type, as in our automatic pistol, when the firing hand tightens, the squeezer is automatically pressed in to release the safety.

German Kar. 43-44, also known as Machine Pistol 44 and as the Sturmgewehr.


BARREL CHANGE LEVER
TELESCOPE SIGHT
BIPOD FOLDED
AA MOUNT SOCKET
PADS TO CUSHION PACK WHEN TRIPOD IS FOLDED CARRIED BY ONE MAN
ELEVATING, TRAVERSING AND AUTOMATIC TRAVERSE GEAR
FRONT SIGHT
AA SIGHT
TRIPOD FIRING TRIGGER (HOOKS UP WITH FINGER TRIGGER)
FLASH HIDER AND MUZZLE BOOSTER
REAR SIGHT
NEW STEEL LINK BELT
MACHINED STEEL BARREL CASING ROUND HOLES
DRUM MAGAZINE, ATTACHED
PLASTIC BUTT

German MG34 dual purpose machinegun. Upper weapon is mounted on tripod for use as a heavy MG. Bottom weapon serves as light MG with 50-shot drum magazine.

Machineguns: Anyone who has studied newsreels showing Marine machinegunners landing on a beach under fire and carrying water cooled machineguns across their shoulders or in their arms will appreciate at once the desirable factors of the German MG34 and the German MG42. In view of the enormous quantities of these weapons which have been captured, as well as in view of the tremendous respect in which they have been held by our troops in Europe, it would seem that a practical field test of their actual application in the Pacific theater might be in order.

The outstanding features of these guns include:

1. Light weight and ability to get them into action fast. They come equipped with a folding bipod mount which permits the gunner to hit a beach and fire from the hip or drop to the ground and use the weapon as a light machinegun. In this connection, the German steel basket drum might be employed very effectively. This is a simple basket type retainer into which a loaded machinegun belt containing 50 rounds is coiled. The basket is mounted in guides provided for it on the left side of the gun. The gunner can advance using this device and fire without the danger of a jam from a dangling loaded belt.

2. The MG34 is a finely manufactured and well machined weapon with a turning bolt on the general idea of that employed in the Johnson light machinegun. It is a very sturdy weapon. The MG42 on the other hand is an extremely cheap weapon made up largely of stampings and castings, but it is a much simpler design, with a most effective locking system consisting of loose lugs in the sides of a hollow bolt which are cammed in and out as the firing pin carrier is moved forward and backward during recoil. Both are recoil operated weapons.

Removing the barrel of the German MG42.

Special folding tripods are provided for these weapons, one for the MG34 and a somewhat different one for the MG42, as is required by the difference in gun structure. The guns can be speedily set up in these mounts, which are so constructed that they may be adapted for antiaircraft fire. A very interesting device built into the MG42 mount is an automatic searcher operated by the recoil of the gun itself. Until recently, these weapons suffered from lack of stability due to the extremely high rate of fire and the comparatively light weight of the guns themselves—about 26 pounds. Recently a new type of muzzle brake was introduced by the Germans which serves to slow the guns down somewhat, but whose particular function is to prevent the gun from rising by so directing the muzzle blast that the tendency is for the gun tripod to dig in.

A noteworthy feature of the design of both of these machineguns is that the barrels are fastened directly into barrel extensions in which the bolt locks. This feature *eliminates the necessity for constantly checking head space* at the barrel removal for cleaning or inspection. Three barrels are normally issued with each gun. When the firing barrel becomes too hot, removing it from the gun and replacing it with a cool barrel is merely a matter of seconds in either one of these German machineguns. The barrel removal system on the MG42 in particular is the simplest, sturdiest, and most practical in use in any machinegun manufactured today. When the bolt is drawn to the rear (the weapon fires from an open bolt) the locking lugs are moved out of the barrel extension and a direct forward thrust on a barrel release on the right side of the gun will lever the rear of the barrel completely out of the casing to permit instantaneous removal of the barrel.

Heavy machineguns: One of the outstanding weapons in this classification is the Russian 12.7-mm. This weapon is fitted with a rate reducer which is said to be particularly effective and to permit rapid change of fire rate. This allows extreme flexibility so that the weapon may be used at a comparatively low rate against vehicles or personnel, yet be immediately available for high speed fire delivery for use against aircraft.

Miscellaneous items: The British have put into service enormous quantities of the Italian Brixia mortars. The Germans in the past year have adapted large numbers of Italian Beretta submachineguns and the excellent Italian Breda light machineguns chambered to use German ammunition. There is ample precedent, therefore, for our employing or field testing captured equipment.

Men in the field have been particularly impressed by the German 50-mm mortar, by the spirit level sighting device employed for rifle grenade launching, and by similar devices and gadgets too numerous to mention. One item, however, deserves special notice—the German metallic link machinegun belt. It is impossible to insert cartridges in this belt improperly. Each individual cartridge holder is of steel and is linked to the next one by a spiral spring. The individual cartridge holder somewhat resembles an ordinary pencil clip. The cartridge is forced down inside the spring holder and a nib at the top snaps into the extracting groove in the cartridge case, assuring that it is in proper line for accurate feeding into the gun. These belts, of course, will not warp and are not easily injured. They should be particularly valuable in Pacific theaters. They may be fastened together easily in lengths of 50 to provide belts of any reasonable length. It is an interesting fact that while the feeding system of German machineguns requires that this belt be fed through this gun with the belt on top of the cartridges, this German belt will actually take our cartridges and, if it is inserted upside down, will function through a Browning machinegun. This improved form of nondisintegrating belt has been favorably reported upon by men encountering it in field use.

To design new weapons and appliances of the type described above would take money, research, and, above all, time. No new design in any machinery, whether automobiles, typewriters, or machineguns, ever comes out of the factory or the design shop without plenty of bugs which must be ironed out in actual use. The Germans have had several years to work the bugs out of their designs. If, as it would seem, many of their weapons can be utilized for special duty purposes by our own forces fighting in the Orient in the near future, why not take advantage of the technical and military skill of the Germans as exemplified in their weapons and put them in the hands of sufficiently large numbers of our combat troops so that we will get an actual and honest evaluation of them under field conditions? And where we encounter a simpler, sturdier or more practical weapon or part thereof, whoy not give it a broad field test now that the opportunity presents itself?

No one nation has a monopoly on brains. And no one ordnance organization has a monopoly on development skill. If just one solitary Marine machinegunner can save his own life or kill another Jap because he is moving forward with a gun which can be brought into action without waiting for the tripod, will anyone say that a weapon which will enable him to do that should not be adequately and immediately tested?

Using the same flag that was raised on Mt. Suribachi, three participants of the famous episode portrayed on the cover of this month's GAZETTE took part in a flag-raising ceremony on the steps of the nation's Capitol in Washington, D. C., as part of the 7th War Loan drive. Members of Congress and ranking Marine and Navy officers were in attendance.

The Battle for Banzai Ridge

Taking this steep, high cliff area on Guam was a difficult operation; holding it against savage Jap counter-attacks required bitter hand to hand combat. *By 1st Lieutenant Anthony A. Frances*

THE meeting was being held in a G.I. tent located in a British owned coconut grove in the south Pacific. Colonel A. H. (Tex) Butler, commanding officer of the 21st Marines, was talking to his staff. The subject was the seizure and occupation of Guam, Marianas Islands. The Colonel went into details of the 21st's zone of action:

"The theory is simple, gentlemen. It's the old school solution—seize the high ground and hold it." He pointed to the zone of action, the cliff area almost a mile inland from our landing beach. "I've been told, gentlemen, that we can't get up that cliff. Our best reports say that a trained cliff climber with line and spikes would have a hard time getting up there. If that's the case, our problem of getting heavy guns, mortars, ammunition, chow and so on up that cliff will be a bit difficult."

Rock-faced and towering as high as 100 feet, the cliff was backed by a higher ridge, the loftiest bump of which was 500 feet above sea level. It was a formidable obstacle. There was no room for maneuvering troops. It was to be a job for which the Marines were cut out—hit the beach, press inland, hit the Nip frontally, and force him to retire, with the bayonet if necessary. The terrain and mission offered little chance of flanking the Jap. He had to be hit head-on.

The Jap was surprised and entirely unprepared for the bold assault against his 100-foot cliff. As a natural defense obstacle, it was perfect—so the Jap figured. He didn't expect us there, but when he found us on his great doorstep, he commenced thrashing us. He lunged with sabers. He pounded us with mortars and artillery. He crawled into our foxholes at night. He fought savagely and well, but all of his charges were fruitless. On the sixth day, his battalions were slashed to pieces, his fight all gone, and he withdrew to his caves to fight stubbornly or to await glorious death.

Getting a Toehold on the Cliff

Scaling the cliff and seizing the high ground was the impossible job that Lt. Colonel Smoak's Second Battalion accomplished on D-day. At 1000 on D-day, the Second Battalion pulled up alongside the Third Battalion, which landed in the assault and had quickly pushed inland to 0-1. At 0-1 Lt. Col. Smoak and Lt. Colonel Duplantis, commanding the Third Battalion, straightened their lines, and Colonel Butler ordered them to press the attack up the cliff. It was the Second Battalion on the left, the Third on the right, and the First in reserve.

The Second Battalion gained a toehold on the cliff top and heavy gear was hoisted. By 1300, the

Cliff Climbing and Cliff Dwelling

Lt. Colonel E. R. Smoak called his Second Battalion company commanders together. Fox Company would be in the assault when they attempted the cliff. Easy Company would echelon to the right rear to conform with the cliff, which cut diagonally across the main axis of attack. George Company took its position in the bottomland below the cliff, as the reserve.

The attack jumped off from the bottomland at noon. Captain Gerald G. Kirby, skipper of Fox Company, found three indentations up the cliff face that offered some cover and concealment. Three rifle platoons headed up them.

Through field glasses at the Regimental OP, the riflemen looked like so many flies crawling up the side of the living room wall. Slowly the men pulled themselves up the cliff, clinging to scrub growth, resting in crevices, sweating profusely in the broiling sun. Scouts on the left drew the first enemy fire. The platoons kept climbing. The platoon on the right was nearly decimated.

The Second Battalion spent the night of D-day on their objective and the pattern of four days' fighting was set on the ridge then and there. The Jap attack closed to a hand to hand combat where the bayonet, a heavy rifle butt, or a quick shot from the hip made the difference between life and death. The morning's light revealed the grimness of that pattern in a single foxhole. On the bottom of the hole was a dead Jap. On top of him was a dead Marine, and on top of the Marine was another dead Jap. The enemy didn't hesitate. He waded right in. Banzai Ridge was a good name for the battleground.

small bridgehead was expanded despite increasing fire from the Jap. When the cliff top was reached, an immediate assault was begun upon the ridge surmounting the cliff itself. By 1400 the objective had been reached and taken. But not without casualties.

Shortly after the objective was taken, the Jap began dumping mortar shells all along the line. Fire fights continued and shells splattered across the ridge all afternoon, but Colonel Smoak's battalion was still in position at nightfall. For his defense, Lt. Col. Smoak put George Company on the left, Fox Company in the center, and Easy Company on the right flank. It was a precarious position, to say the least, because the battalion's left flank was exposed, and the right flank was tied in with our Third Battalion only by outposts, with sizeable gaps between positions.

Throughout the Second Battalion's sector on the night of July 21-22, mortar and artillery shells made life miserable, robbed Marines of rest, and made the ground costly. The Jap made a fair bid to retake that precious high ground, but failed. In the comforting morning light of July 22, the Second Battalion licked its wounds and began the painful job of evacuating its litter cases.

Holding What We Had Seized

Round one was over and the first half of the axiom was complete: The high ground had been seized. But the ground had to be held. The second round was coming up, and it was to last four days and four nights.

Late in the afternoon of July 22 the First Battalion, which had been assigned to Division reserve earlier in the day, was moved up to relieve the Second Battalion. The First Battalion was more grim than it was fresh. We had hit the beach the day before in a hail of Jap mortar and artillery shells. There was no respite from the shelling when we got ashore.

A great deal depended on the holding of that high ground the Second Battalion had taken. Had the Jap recaptured it, he would have been able to place observed fire on all our beach installations, the Division and the Regimental Command Posts. As it was, he was doing plenty of damage, and was hampering our work with his prearranged mortar and artillery fires.

Well after dark on July 22, the First Battalion, commanded by Lt. Colonel M. C. Williams, had its men and equipment on the ridge. Able Company was placed on the left flank, Baker in the center, and Charlie Company on the right flank. Getting into position wasn't an easy job. The Jap was never far away and kept us close to the ground throughout the relief.

At about 2100 the Jap opened up with his initial counterattack. Shells from heavy mortars and knee mortars preceded the arrival of the Japs themselves and our own mortars barked hoarsely in reply. Then from defiladed positions, the Jap came out in force, driving fiercely into Able Company's third platoon. Red flashes stabbed into the night like adders' tongues flicking out of long black barrels. One by one the platoon communication lines were cut by mortar shells. The company's wire crews repaired them in darkness.

While Able Company was raising hell with the Jap and vice versa on the left flank, Charlie Company was having its troubles on the Battalion's right flank. The Jap bumped up against Charlie Company just before midnight. This attack also came in force, and was also preceded by mortar fire. Baker Company, in the center of the Battalion, was peering tensely into the dark while both flanks crackled with deadly fireworks. The night was crawling with Japs but an attack in Baker Company's sector failed to materialize. Mortar crews dished out booming orange blossoms while the Company hugged its foxholes.

Despite judicious firing, an enormous amount of ammunition was expended. At midnight, all companies reported a shortage of grenades and of 60-mm mortar and small arms ammo. The Battalion CP was alerted shortly before midnight and every

Supplying the Ridge

It took about 14,500 pounds of ammunition, chow, and water to supply the First Battalion for one day's work on the Ridge. Manhandling a little more than seven tons of bulky material up a vertical cliff and from there over winding trails to the front lines was back-breaking, time-consuming labor.

Occasionally a Marine would lose his footing on the cliff, and a 50-pound water can would go careening through the Battalion CP. One of them plowed into a radio set, smashing it like an egg shell.

To facilitate the supply situation, and to move wounded down from the cliff, Marine engineers came forward and fashioned a "gizmo" that saved endless carrying parties. Some called the gizmo a dolly. Actually, it was a one-track, hanging basket trolley. Anchored at the top and bottom of the cliff on a 45-degree angle, a heavy line made the track. A pulley supported a Navy wire stretcher. Guy lines at either end of the basket-stretcher guided its wounded cargo coming down, or ammunition and water going up. Once in operation, that basket made the trip up and down at practically all hours of the day and night. It speeded up supplies and made evacuation easy.

The one-track, hanging basket trolley comes down the slope from Banzai Ridge with a wounded Marine. On return trips, supplies were carried to the men at the top.

available man was turned to lugging ammunition up the cliff.

By 0300, the Jap was convinced that he had enough for the time being. He withdrew, leaving many of his dead in and around our foxholes. At daylight, Colonel Williams immediately ordered the company commanders to straighten their lines, replace key men who were casualties, and improve all positions.

We were unable to continue the attack that morning. The Third Battalion was unable to tie in with us due to heavy fighting in its own sector. Also, the Jap-held Fonte Hill dominated our entire zone of action. The day of July 23 was devoted to consolidating our lines, improving our positions, and moving up supplies as sporadic mortar and small arms fire harassed our activity.

The night of July 23-24 was another sleepless one. The Jap lobbed over knee mortar and heavy mortar shells throughout the night. Our mortarmen answered in kind. When the probing Jap came too close, he received a shower of hand grenades from our foremost positions. A platoon of Japs banzaied into Baker Company, bayoneting one of our men and wounding several others. The penetration developed into a melee, with Japs and Marines intermingled. The attack was smashed in short order. Only a few Japs were able to withdraw.

By the evening of July 24, the situation on our left flank had improved somewhat, but the Jap still held Fonte Hill. In spite of that, the decision was made to continue the attack. The order reached the First Battalion's CP about midnight. Huddled under ponchos, Colonel Williams and his staff conferred, writing the following battalion attack order:

"This battalion will continue the attack at 0700, 25 July, 1944 . . . seize 0-3 . . . prepared to continue the advance on order . . . companies echeloned to the left rear . . . Charlie on the right, Baker to the left rear, and Able Company anchored on the battalion's left flank. . . ."

From the Battalion OP on the morning of July 25, the battalion officers viewed our zone of action. To the immediate front was a draw perpendicular to the axis of our advance. In the center and about 300 yards distant was Quarry Hill. On the right

was a dome shaped hill we called Round Hill. The most dangerous terrain feature was Fonte Hill, on our left, and outside of our zone of action. Fonte afforded the Jap perfect observation, and positions from which to bring enfilade fire on us just as soon as we left the line of departure, which was our own front line.

Ten minutes after our attack jumped off, Baker Company's scouts were fired on. Shortly thereafter Charlie Company's scouts drew fire. Our advance was cautious. The four platoons covering our zone of action fought their way through 200 yards of light enemy fire, which increased as we moved forward.

About 0900, Baker Company captured Quarry Hill, an intermediate objective. Our attack was moving along successfully. We were taking occasional casualties, but the Jap was not making a strong bid to stop us. We later learned he was lurking—waiting and ready to give us a real fight.

Caves to Accommodate Japs

Quarry Hill turned out to be a small Waterloo. The east side of the hill was a large gravel pit which proved to be a myriad of caves, tunnels and hiding places for the Jap. He had to be ferreted out. Two flamethrower teams worked down into the pit while machineguns discouraged the Jap from sticking his head out. Japs with this G.I. hotfoot fled from their holes like a covey of quail. As fast as they came out, they were mowed down by rifles and machineguns.

The Battalion OP moved to a vantage point on top of Quarry Hill.

Then the Jap, who was watching us from Fonte Hill, began to stir. From that point the Jap lowered the boom with some heavy stuff. Shells splattered like a stick of bombs against Quarry Hill and in the draw behind it. It was a complete surprise. Marines scurried for cover, several were knocked off their feet. One was hurled through the air by the shell blasts.

Baker Company's position in the draw behind Quarry Hill was clearly untenable. Captain Beck moved his men out. Back on Banzai Ridge, he held a muster of Baker Company and began his reorganization. A checkup showed he could muster only two patched up platoons—approximately 75 riflemen in all. Able Company was in better shape, but from an original strength of 215 men, Captain Shoemaker was now operating with only 130 men. Captain Helgen's Charlie Company was in about the same shape as Baker Company. Round Hill had proved to be a costly objective to Charlie Company earlier in the day.

Bulldozing a Road to the Ridge

By the late afternoon of July 25, Marine engineers had completed a road up to Banzai Ridge. By angling over to the left and skirting the cliff face, the road was bulldozed to the high ground on our left. They were attached to Lieutenant Kroncke's platoon and he was ordered to wipe out a strongpoint that had riddled Charlie Company on Round Hill. Kroncke moved out just before dusk. He never came back.

There were no more than 250 men manning the First Battalion's positions that night.

Islands of Resistance

On the night of July 25-26, Baker Company was spotted along the line in scattered but sufficient numbers to make the difference between success and failure in repelling the Japs' furious charge.

One of these islands of resistance was a Marine private first class armed only with his BAR. There was not an able-bodied man on either of his flanks and the Japs were pouring over the ridge top. But the Marine would not withdraw. He stuck to his BAR to aid and protect wounded Marines about him. In the light of a star shell he spotted the glint of a Jap officer's saber. The Jap was on his belly like a lizard, slithering forward. The Jap slashed the Marine's wrist but fell, together with 10 men behind him, in one burst of fire from the BAR. When his BAR ammunition was gone, the Marine used the heavy butt of his automatic to hammer the Japs.

Another island of resistance was a corporal, a tough machinegunner who, by rights, should have died. The men around him were either dead or wounded. The corporal's last gunner was finally wounded by a grenade. He pulled the gunner away from the smoking machinegun and manned it himself, spraying the Japs silhouetted in the flares. At intervals he took care of his wounded gunner. As he crouched behind the gun, the corporal was critically wounded in both legs by another hand grenade. It was obvious that the Jap was anxious to get that gun out of action. The corporal stuck to his gun and was finally bayoneted by the oncoming Jap. For the rest of the night he lay beside his gun with his helpless comrade. At dawn he was found lying in a pool of blood, still alive.

The corporal was evacuated to a naval hospital. Scuttlebutt has it that he started right in, snowing the nurses with gory tales of Banzai Ridge. And well he might. The area in front of his machinegun was littered with Japs.

The day had gone badly. We had taken a beating. Heavy casualties and intense artillery fire had forced us back to the positions from which we had jumped off at 0700 that morning. Our men were tired and worn. And yet the work had to go on. We needed more bullets and beans, and the carrying parties shuttled back and forth to the dolly we had rigged at the cliff top to haul up supplies and lower our wounded.

Shortly after dark, the Jap began peppering our lines with knee mortars. Most of our men were too tired to be worried about it. This sporadic fire continued until around midnight, when the Jap threw in a concentrated barrage of heavy mortars that shook the ridge line. All three companies called for illumination. Phones jangled in the night all the way back to the Division CP. Radio reached a cruiser and her five-inch battery began throwing out star shells.

They Head for Our Mortar Positions

The Jap began moving in, and his attack reached its peak two hours after midnight. The attack's full force hit Baker Company squarely in the center of our battalion sector. Captain Beck's whole front was a confusion of Marines and Japs—alive, dead, and wounded. Squads and platoons ceased to exist. Our men were fighting alone or in pairs.

Some of the Japs got through and it was obvious from the beginning that they were headed for our mortar positions. From the top of the cliff, they could see the sparks fly from the increments as the shell left the tubes. They headed right for those sparks.

Above the cliff, the battle for Banzai Ridge was still in doubt. Our lines were breached, and the Jap was still coming over the top in alarming numbers. Somehow the word "withdraw," passed by unknown authority, began to spread up and down the line. It was a crisis. Captain Shoemaker, realizing the situation in all of its seriousness, dispelled any notion of withdrawing and his men stuck to their guns. He reinforced his right flank, where the Jap had cut through Baker Company.

Shoemaker's company, along with scattered remnants of Lieutenant Mulcahy's platoon, stopped the Jap from widening the breach in our lines. At dawn, Shoemaker ordered a barrage from his 60-mm mortars which chopped up the Japs that had penetrated our lines, and knocked out Jap gun crews still coming over the ridge. Then Shoemaker led a counterattack and restored our lines. It was a simple matter in daylight to pick off the Japs that were still inside our lines. By 0800 the fireworks were over.

In front of our lines, dead Japs and their equipment were scattered in appalling numbers. In some spots there were heaps of cadavers, with a sprinkling of arms and legs that had been blown from bodies by our mortars. It was impossible to walk two paces without stepping on an already bloating body. In the grim morning light, tired Marines inhaled deeply of that first morning smoke. The souvenir hunters collected varied booty. But besides losing family heirlooms, the Jap paid heavily in guns and equipment. More than a dozen heavy machineguns were scattered along the ridge. Light machineguns, rifles, knee mortars, and some heavy mortars lay where the Jap had dropped them. Estimates of the number of dead Japs ranged from 500 to 700.

Not long after sun-up we learned that the attack was a part of a large scale coordinated attack that involved the entire Japanese 18th Infantry and one battalion from another Jap regiment. Both our Second and Third Battalions also had been attacked during the night. By all odds, however, it seemed that the heaviest attack had come in our sector where the terrain was more favorable to the Jap.

". . . And All Is Won"

Banzai Ridge was strewn with the flotsam of war. Shattered guns, scores of dead Japs, discarded gear, empty cartridges, and grenade cases were scattered as though a typhoon had swept our lines into a nightmare. Weary Marines settled down in their foxholes when nightfall came, determined to hang on come hell or high water. And that night it came—in a great avalanche.

Leo Tolstoi said that in a battle a fool can yell "Surrender!" and all is lost. A brave leader can yell "Victory!" and all is won. For us on Banzai Ridge, victory swayed in a delicate balance that night of the Jap counterattack. The war gods watched it sway.

The rumor "Withdraw" began to pass along the lines.

Captain Shoemaker realized the situation in all its seriousness. In answer to the cry "Withdraw!" he rose up from his foxhole, exposing his giant frame to enemy fire, and loudly called into the night, "No, by God, we stay here and hold them!"

Shoemaker was not one for heroics. But as he stood on Banzai Ridge in his captured Jap trench coat, his massive shoulders straining at the seams, his very figure was a bulwark that couldn't be shaken. He talked to his men: "If we don't hold them here, the whole beachhead will go." His calmness and earnestness under fire were awesome.

The captain's logic dispelled any notion of withdrawing. The men stuck to their guns.

The Marine in the Foxhole

When the Guam campaign was over, Colonel Butler sent a personal letter to the men and officers of the 21st Regiment. In part, the colonel's letter said:

". . . Realizing the importance of the position we held, [the enemy] launched an all-out counterattack across the front of this regiment . . . The individual heroism, tenacity, and fighting spirit demonstrated on this occasion will, in my opinion, always be a bright page in the history of this regiment . . . I consider it my extreme good fortune . . . to have been provided with a regiment of "fighting fools" to carry out the plans I laid down . . . stayed on [Banzai Ridge] in the broiling sun and through continuous mortar fire in the daytime, and who spent his nights beating off enemy attacks, and to those who contributed to keeping him there. . . . I am proud to be your Regimental Commander."

The Jap scheme of attack throughout the five days' battle was not new, except perhaps his use of massed knee mortar fire. The situation for this was ideal since he had excellent positions along our front line in the defiladed ditches along the road. The enemy planned and executed all his strong attacks at night. Not once during daylight hours did he show himself in large numbers. At night, however, the Jap was thwarted to a great extent due to our extensive use of the new 60-mm mortar illumination shell, and the naval gunfire flares which came from a cruiser. The Jap depended largely on a cover of darkness for his success. The concentration of illuminating shells turned darkness into daylight, robbing the Jap of his most precious asset. Under illumination shells, Banzai Ridge was floodlighted like a runway on an airfield.

Tactics for their attacks on Banzai Ridge were: (1) a heavy preparation of mortar shells; (2) a diversionary infiltration attack, designed to reach our rear command posts, cut communications and confuse the entire command; (3) a headlong frontal attack, executed with fierce determination and accompanied by yelling and screaming, both in English and in Japanese. One of their favorite English challenges was: "Wake up and die, Marine." To which our Marines replied, "Come on in, you bastards, and we'll see who dies."

In spite of the continued and concentrated use of all supporting weapons, the Jap wasn't stopped cold out in front of our lines. He did come in. In some spots, he came through. The artillery and heavy mortars bounced the Jap around before he got to us, but the one weapon which proved its worth in gold was our hand grenade. Night fighting is close-in fighting. When the Jap comes in in bunches, he makes an excellent grenade target. There is no doubt about the superior punch and fragmentation of our hand grenade in contrast to the Jap grenade.

And in the final analysis, it was the Marine armed with a hand grenade in a foxhole who stopped the Jap on Banzai Ridge.

Qualifications Needed by Enlisted Men for Officer Training

Selection of men for transfer to Marine Corps Schools, Quantico, Virginia, as candidates for temporary commissions in the Marine Corps or the Marine Corps Reserve will be based on the following qualifications:

. (Without Overseas Service)
Reference: Letter of Instructions 878
Qualifications:

1. Be on active duty, having completed four months of active service prior to application.
2. Be a male citizen of the United States.
3. Physically qualified for commissioned rank; including a minimum visual acuity of 15/20 in each eye, capable of correction to 20/20; free of malaria for a period of six months.
4. Minimum education:
   (a) Two years accredited college work for men without overseas duty.
5. Age—Reached 19th but not 32nd birthday.
6. Minimum GCT of 110.
7. Be recommended by CO.

(With Overseas Service)
Reference: Letter of Instructions 969
Qualifications:

1. Have served, or are serving, during the present war, outside the continental limits of the United States.
2. Male U. S. citizens of officer caliber, who desire temporary commission.
3. Physically qualified for commissioned rank; including a minimum visual acuity of 15/20 in each eye, capable of correction to 20/20; free of malaria for a period of six months.
4. Selected by Commanding Officer.

An article by Major D. V. McWethy, Jr., describing the new Platoon Commanders' School for officer training will be found on the inside back cover.

Rehabilitation of Guam

How we are handling the job of restoring this island's civilian economy while making it into a powerful base. The future of Guam is already becoming apparent. *By Major General Henry L. Larsen*

GUAM, smashed by American naval guns and bombs in 21 days of battle last summer, is being reborn. This 225-square-mile island, which before the war was a little known coaling station and seaplane stop, is being built into one of the most powerful bastions in the Western Pacific—and the work is fast nearing completion.

However, building Guam into a great forward area base was not the only problem that faced the Island Command when the island was declared secured on August 10, 1944. This was the first American territory liberated from enemy conquest. It contained 22,000 American nationals, most of whom had been left homeless, jobless, penniless, and ill by two and a half years of Japanese occupation and 21 days of modern warfare. The rehabilitation of these natives, who for centuries had lived in a carabao cart economy, to fit into a modern civilization of teeming harbors, huge airports, and busy superhighways, posed a major problem.

This problem was met by closely relating the job of rehabilitating the civilian population with the main task of constructing a powerful base quickly, in order that we could continue to press the war with Japan toward a victorious end.

During the invasion of the island ships brought medical supplies, foodstuffs, clothing for men, women, and children, and Marine tents to shelter the natives as they made their way through our lines. These were set up hastily in temporary refugee camps. In a short time labor offices were giving employment to natives on construction projects while Navy doctors were treating the people suffering from malnutrition, wounds, shock, and disease—the result of Jap occupation.

Results of Our Reoccupation

That progress has been made in rehabilitating Guam's population can be seen from the results of eight months of American reoccupation.

Today, of 3,576 males between the ages of 15 to 40 on the island, 3,025 are in the employ of military activities. Hundreds of women also are employed. Last August there were 22,000 natives on relief. Today there are less than 400, most of whom are aged, crippled, or ill.

In the foreground, rubble has been cleared from Guam's capital city, Agana, where Island Command plans call for leveling of entire city and completely rebuilding it.

Agana was a city of 12,000 before U. S. Naval gunfire leveled it in the invasion bombardment last summer. This is the city with some of its rubble cleared away.

Three civilian wholesalers and 38 retailers are in business to sell food and trade goods at ceiling prices established by the economic department of the Military Government section. These native merchants obtain their supplies from the Military Government. There is direct rationing of critical items and indirect rationing based on average customer total at each store. Restaurants, bakeries, barber shops, shoe repair shops, and plumbing shops also have been reopened by natives to serve the civilian population.

Industry Resumes on the Island

The resumption of a soap-making industry is being encouraged and application for modern equipment has been made. Steps also are being taken to reestablish a former soft drink bottling plant. A former island ice plant is already in operation. Manufacture of locally woven products and native handicraft is encouraged and training along these lines is provided.

Land totalling 2,202 acres has been cleared for farming and seedlings provided. More than 1,300 acres have been planted. The harvest from these lands up to February 1 included 155,590 pounds of cultivated vegetables, 24,390 pounds of uncultivated vegetables, 210,959 pounds of cultivated fruit, 602,297 pounds of wild fruits, and 38,830 pounds of corn. Equipment and tools to aid farm efforts have been ordered, as have poultry, cattle, and swine for breeding purposes. Fishing has been confined to line and net methods within reach. Tackle and equipment have been supplied to native fishermen, who from last August until February 1 caught 104,887 pounds of fish.

Fifteen schools, including a high school in the capital city of Agana, have been established. These are temporary structures. The enrollment in these schools on February 17 was 6,388, with 134 teachers in charge of educating the youth of Guam.

The construction of airfields, military installations, and roads has required considerable relocation of natives. Approximately 7,500 civilians already have been moved into new villages at Agat, Asan, Dedado, Sinajana and Talofofo. More than 800 homes with wooden floors, sides of matting or lumber, and roofs of thatch have been constructed in these villages. Nineteen chapels or churches, 12 dispensaries, and three public markets also have been built. All of these are temporary structures necessitated by the lack of shipping space to bring in materials to meet civilian building needs. Future temporary construction includes 20 more schools, 10 chapels, three dispensaries, and 1,500 dwellings.

A bus line has been established by the Military Government to transport civilian workers from their village homes to work.

Commercial and banking facilities are available to both civilians and military personnel with the recent reopening of the Bank of Guam. Established by the Naval Government in 1915, the bank was demolished by our shellfire during the invasion of the island. Its vaults, however, remained intact and contained all of the bank's records. Not a single depositor will lose one cent of his money. The bank has $100,000 in capital funds, $300,000 in emergency war funds, and assets totalling $1,500,000 made up of cash, government bonds, and loans.

The old Naval Hospital in Agana has been repaired and put into use for civilians. Several Quonset huts also have been added to the hospital's facilities. Twenty-three medical and dental officers and 167 corpsmen have been assigned duties in public health and hospital supervision.

Improvement in Public Health

When Guam was reoccupied by American forces the health of the native population was at a low ebb. Virtually every man, woman, and child was infested with worms and yaws. Nearly every small child suffered from malnutrition. The tuberculosis rate, always high on the island, had increased, while the mortality rate soared to a new high.

Today, thanks to splendid work by Navy doctors, corpsmen, and native nurses, the health of the island's people is back to normal and indications

are that the mortality rate within the next few months will be substantially reduced and it is expected to hit the lowest mark in the history of Guam. Nearly all cases of malnutrition have been successfully combated, as have yaws. A tuberculosis isolation ward has been set up in the civilian hospital, which is making great strides toward reducing the disease. A maternity ward and infant care clinic also are in operation and Guamanians are fast becoming health conscious.

Guam never has had a civil government, but the prewar practice of appointing a commissioner for each municipality as the civilian head of the community has been resumed. Commissioners act in liaison capacity between officers of the Military Government and the people in their communities. Civil courts were temporarily suspended with the arrival of the Military Government but were reopened on October 31. Jurisdiction over offenses set forth in the Penal Code of Guam, proclamations, official notices, and Military Government orders and regulations is still limited to military courts.

The public safety of the island has been entrusted to 200 selected civilian males, augmented by officers and men of the Naval forces. These make up the Guam police force. Patrols are maintained day and night in all civilian communities and police also have helped in seeking out, capturing or killing of Japanese still remaining on the island. Fire fighting departments with modern equipment have been set up throughout the island, including civilian communities.

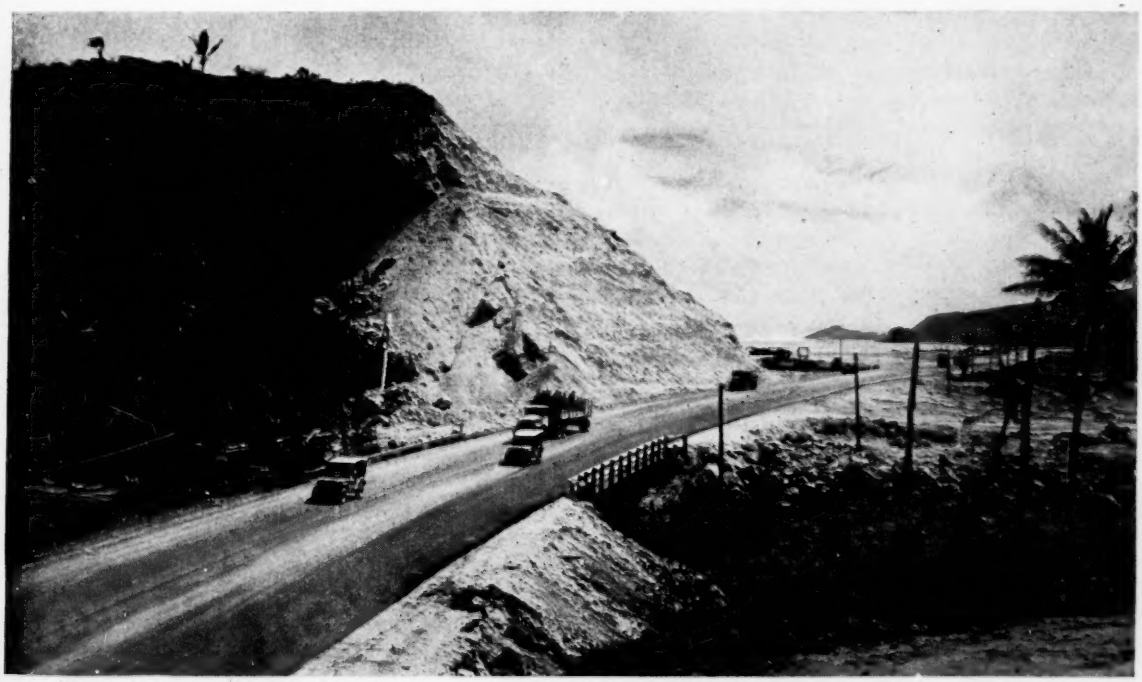
For purposes of military necessity some land has been appropriated. Compensation for land acquired will be recommended by a claims commission after a complete survey of the island is finished. Work now is being done on title investigation and appraisal of private land taken for military purposes. Title records indicate 4,479 individual landowners and 6,106 separate parcels. The last assessment of Guam property was reported to have evaluated privately owned property at about $2,000,000, this reputedly being about 50 per cent of its actual value.

War damage debris has been removed in all areas of the island, including the former villages of Agat, Piti, Sumay, and Asan. At present, debris is being cleared in Agana, and will be completed as expeditiously as temporary housing can be erected for the approximately 2,750 natives living in the ruins.

That is the picture of what has been done in the rehabilitation of Guam's population to date. What does the future hold for these American nationals?

First, financially they have a great era of prosperity ahead. The island's military installations

Major General Henry L. Larsen, author of this article, became Island Commander of Guam in July, 1944 and still holds that position. He left a post as Director of the Division of Plans and Policies to become the first military governor of American Samoa on January 15, 1942, following which he was Commanding General at Camp Lejeune.



Engineers are building a six-lane superhighway which will run the entire length of Guam. Here, a mountain was blasted and bulldozed to make room for the road.

Temporary villages like this now house the Guamanians whose homes were destroyed.

and personnel will be far greater than it was in the prewar period. This will mean that military and governmental demands for labor will be in excess of that available here. Therefore, every man and woman desiring work will find employment. Money will be here in greater abundance than ever before. This will boost business on the island to a new high.

Secondly, the development of water supply systems for military purposes will contribute to civilian requirements as well, while the construction and installation of a modern power station will make electricity available to the civilian communities.

Developing Transportation Facilities

Thirdly, the development of harbor facilities, which includes construction of docks and storage facilities, will contribute to the import of civilian necessities and luxuries.

The Island Command believes that local civilian contractors should be encouraged to take part in postwar activities. Shipping schedules between Guam and the United States should call for frequent and regular visits of ships to the island and civilians should resume direct trade with merchants and firms in America. Encouragement should be given to commercial air lines to make Agana a regular port of call.

Scholarships for selected native high school graduates should be arranged at leading American universities and professional schools for agriculture, medicine, and law, until such a time as civilian prosperity will make it possible for native parents to bear the expenses of higher education for their children.

When the shipping situation eases and materials can be made available, modern housing with modern sanitation should be provided throughout the island. At least 15 modern school buildings are needed in the largest population centers, as well as up-to-date buildings to house government administration offices, the bank, post office, commissary, public works department, a central police station, and 10 to 15 outstations. A modern civilian hospital, 10 to 15 outlying dispensaries, a civilian courts building, a large auditorium in Agana, modern motion picture houses in not less than 15 communities, with two for Agana, a central library and a museum should be on the construction agenda. Modernization of such buildings should include installation of electrical systems and modern sanitation.

Since the population of the island is now housed in villages composed of temporary dwellings, it will be necessary to rebuild communities of permanent structure to house the people after the war. The principal project among these will be the reconstruction of Agana, where 12,000 of the island's 22,000 inhabitants lived before the war.

The blueprints for the island picture an earthquake-proof, typhoon-resisting city of modern homes to replace the once picturesque but crowded and insanitary capital. There will be wide streets in which children can play safely. The superhighway, running from one end of the island to the other, is being constructed along the seashore, bypassing the city.

Reconstruction plans call for an ideal city of beautiful homes, spacious green lawns, parks, and playgrounds. Its 1,750 new homes will be modern, compact, and economically built with a minimum of imported materials.

Agana will have a business zone and first, second, and third class residential zones, while an industrial area is planned on the outskirts of the municipality. Homes, which formerly were located on small lots, will be built on larger lots, giving every residence front, rear, and side lawns. This will be accomplished by making Agana a larger city in area and by draining outlying swamps which are worthless and a menace to health.

All property owners will be limited to the same number of sites that they owned before the war. This will keep property values from soaring and stop any attempts to "cash in" on the rebuilding of the city.

An effort will be made to preserve the old Plaza and rebuild its famed cathedral and governor's palace. All streets will be wide and have sidewalks, in contrast to the old Agana of narrow roads and no sidewalks. The new city will also have boulevards and alleys in the rear of the rows of houses in order to make garbage and refuse collection convenient, as well as to simplify the job of maintaining cleanliness and sanitation.

If the government does not bear the cost of reconstruction, it is hoped it can be financed over a long term to permit townsfolk to repay it without undue hardship.

If these plans materialize, Guam, already referred to as "the future Pearl Harbor of the Western Pacific," also will be a tropical Utopia for its 22,000 pleasant, America-loving people.

Marine Aviation Supply

The responsibility of keeping Marine planes and flyers supplied is shared by the Army, Navy, and Marine Corps. The author explains how this work is coordinated.

By Captain Edward T. Butler

THE story is told about an Aviation Quartermaster in the South Pacific who was plugging away at his paper work, when the 'phone rang. "Need three brassieres, right away, quick!" Not having feminine apparel in stock, he furnished a bit of silk and two small coconut husks to serve as models to the parachute riggers, whose ingenuity made possible a swim in the lagoon for some actresses in a U.S.O. troupe.

Apart from lingerie, Marine Aviation units are well equipped to perform their missions. Despite historical transition from muskets to aircraft, basic premises of military supply are unchanged. Men must be fed, clothed, sheltered, transported, and equipped, while machinery must be serviced, maintained, and replaced. Military supply has progressively developed into the vast structures of the Army Service Forces and the Naval Supply program as man's ingenuity evolves new tools of war.

The oft quoted proverb that reads:

> "For want of a nail,
> The shoe was lost;
> For want of a shoe,
> The horse was lost; etc."

has long illustrated the importance of logistics in the defense or conquest of a kingdom. The commander who neglected to provide for the extra nail and the extra shoe, and the extra horse, flirted with the loss of a battle; perhaps the loss of a kingdom and his head. Command responsibilities for logistics are immeasurably increased in today's warfare involving the contributions of science in aircraft, ships, tanks, and all the paraphernalia of conflict. This increased burden is evident when the structure of the system which supplies Marine Aviation is studied.

The Aviation arm of the Marine Corps is engaged in supporting amphibious assaults deep into the heart of Japan's empire and in the garrisoning of areas under our control where sizeable forces of the enemy need to be convinced of their defeat by relentless attacks. Supplying the long ranging, hard hitting Corsairs, Hellcats, and Helldivers is a big job whose beginnings are found in factories, mines, arsenals, the Navy and War Departments, and whose end product is the repair of a plane in Leyte. If a chart showing the Marine Aviation Supply system *in toto* were drawn, the lines depicting flow of material might well be done in three colors—red for the Army, blue for the Navy, and green for the Marine Corps.

First of all, one must draw in blue the skeletal framework of lines and boxes representing offices, depots, annexes, and air stations which comprise the bone structure of Naval Aviation Supply. Imposed upon this, drawn in heavy green outline, is the relatively simpler system of offices, main depots, base depots and field depots, upon which the Marine Corps is dependent for bread and bullets. Still another series of red lines and boxes is needed to demonstrate the Army's supply responsibility to Marine Aviation in certain areas.

By now, the careful reader who examines such a chart will exclaim, "But there is no Marine Aviation Supply System! You exist on the contributions of the Army, the Navy, and the Marine Corps!" The careful reader is exactly right. Marine Aviation Supply is a joint responsibility of the Quartermaster General and the Bureaus of the Navy Department, with the Army occasionally assisting. Sever any of the pipelines, destroy any of the depots, and inevitably the effect is felt by Marine Aviation units.

The line dividing Marine and Navy supply responsibility is not one drawn with a straight edge. Laws, regulations, customs, temporary exigencies, personalities—all have produced an undulating boundary that changes frequently. In general terms, the Navy, through the Bureaus, is responsible for furnishing complete aircraft and everything relating to the servicing, maintenance, and operation of the plane, engine, all accessories, and airfields. The Marine Corps provides for all the needs of personnel in the field, including issue of individual weapons, food and clothing, camp equipment, and like items. However, there are so many exceptions to this general rule, that a wise old quartermaster used to say, "Son, if you can't get it from one, try the other!"

Functions of the Bureau of Aeronautics

Further study of the problem of supply responsibility for Marine Aviation properly begins with a brief analysis of the Navy Department's agencies charged with supporting aircraft.

Until 1944, the Bureau of Aeronautics was the overseer of the Naval Aviation Program. The job of directing operations, training and logistics proved a heavy load, and into a newly created office, the Deputy Chief of Naval Operations (Air), went the following divisions: Planning, Personnel, Training, Air Technical Analysis, Air Transport, Marine Aviation.

The Bureau of Aeronautics is now charged with purely material and technical functions. Here is

Gasoline drums rolled up Luzon beaches continuously to power the planes engaged in the offensive on Manila. They must continue to roll wherever planes are based.

lodged much of the logistical responsibility for Marine Aviation, which is executed through the following sections:

ENGINEERING—design and development of aeronautical materials.

FINANCIAL—funds, obligations, and expenditures, allotments, and estimates.

PROCUREMENT—Initiates, coordinates, and follows through on initially procuring airplanes, engines, propellers, and accessories.

PRODUCTION—liaison with commercial aircraft and parts manufacture, scheduling.

MAINTENANCE—provides for upkeep and repair of aircraft and shore facilities.

PUBLICATIONS—distributes a vast amount of technical literature.

PHOTOGRAPHIC—cognizance of all "picture-taking."

SPECIAL DEVICES—designs many interesting gadgets to speed training of pilots, navigators, gunners, etc.

SUPPLY—catalogues, surplus property, BuSanda liaison.

Initial procurement of aircraft, engines, propellers, and accessories is accomplished by BuAer but the subsequent replenishment (excepting aircraft and complete engines) has been delegated to the Aviation Supply Office. The ASO is made up of a vast assemblage of warehouses and offices in Philadelphia, with depots and annexes far out in the Pacific. Here, in addition to the BuAer delegated replenishments, is centered the procurement of standard aeronautical material, common to all aircraft. Critical items (those consumed rapidly and difficult to procure), are controlled as directed by the Fleet Commanders through periodic reports and an ingenious stock record, so that in an emergency, shipments may be diverted from any depot having a surplus to a unit whose planes otherwise would be grounded, in the same manner that a general distributes troops to fill the gaps in his defense position.

The Bureau of Supplies and Accounts (BuSanda) feeds, clothes, transports, and pays the Navy. It is a joint trustee with the Bureau of Aeronautics over the affairs of the Aviation Supply Office. Supply Corps Officers working under the regulations promulgated by BuSanda are the supervisors of the myriad functions of the ASO and its dependencies. For all purposes, the Aviation Quartermaster in a Marine Aircraft Group is a Navy Supply Officer so far as aeronautical material is concerned. It is to the Manual and Memoranda published by BuSanda that he turns for instructions on requisitioning, accounting, and surveying of property under Navy cognizance. As he is also accountable for Marine Corps property, he keeps two sets of accounts, two sets of stock records, and speaks two different supply "lingoes." Like the circus roustabout who plays in the band after the tent is erected, he "doubles in brass."

Aircraft armament, bombs, ammunition, bombsights, mines, and kindred destructive matter visited upon the enemy by Marine Aviation units are the

responsibilities of the Bureau of Ordnance (BuOrd) after design and specifications are approved by BuAer. The equipment for servicing and maintaining aircraft armament is included in certain types of functional components prepared by BuOrd specifically for Marine Corps units, and are procured from Naval Supply Depots (Ordnance Section).

The Bureau of Medicine and Surgery (BuMed) arranges for the medical stores which return wounded and sick Marines to the active roster. The Senior Medical Officer in a unit is in charge of procurement from Supply Depots.

Activities Reflect Overall War Plan

Builder of air stations and airfields under the approved plans of BuAer, the Bureau of Yards and Docks (BuDocks) is a streamlined Paul Bunyan to Aviation units. Its Seabees construct landing strips overseas and erect camp facilities, using the standard units (functional components) developed by the Navy for housing and messing personnel. Motor vehicles, cranes, bulldozers, crash and fire trucks—all are procured and issued by BuDocks with the approval of BuAer.

The Bureaus and agencies listed above accomplish their missions as directed by their respective chiefs, who in turn are responsible to higher echelons of command. Their activities reflect the overall War Plan evolved by the United Nations, and are integrated with top planning agencies at every level of command.

Turning now to the Quartermaster General's Department, the reader will recognize familiar faces. Despite the Corps' expansion, the essential simplicity of its supply system has been maintained. The business of the Department is accomplished through the following divisions at Headquarters, Washington, D. C.: Disbursing and Transportation, Engineering, Financial, Personnel, Motor Transport, Ordnance, Property Accounting, Purchasing, Signal Supply, Supply, Utilities, War Plans—Statistical.

Clothing, individual equipment, weapons and ammunition, camp and office equipment, ground radio and communications gear, chemical warfare material—all are supplied to Aviation units through the Depots of Supplies at Philadelphia and San Francisco, and the Base Depot at Norfolk, Camp Pendleton, and those Base and Field Depots strategically situated overseas.

Subsistence is furnished here at home through Army Market Centers and the Depots of Supply, while overseas the area commander directs rationing from appropriate sources, regardless of the services involved.

The skeletons of two supply systems have now been outlined, but the forces that articulate them into flexible, functioning services can best be understood by watching them at work, both inside the continental limits of the United States and in the Pacific Area.

An Aircraft Group usually consists of the following elements: Headquarters Squadron (Hedron); Service Squadron (Sevron); Three Tactical Squadrons (Fighter, Dive-Bomber, Torpedo-Bomber, in any combination).

A Headquarters Squadron is composed of the command elements of the Group (commander, exec, operation, communication, etc.), who direct and coordinate the activities of the tactical squadrons. The Service Squadron is established to do exactly for the Squadrons what its name implies; the performance of servicing, maintenance, supply, and transportation. Three distinct concepts dominate supply activities of a newly formed Group:

(1) A stock of aeronautical and "housekeeping" material must be accumulated, preserved, and packed to sustain the unit for a definite period of time overseas.

(2) Training activities require a daily issue of items to the squadrons, which must be accomplished apart from the hoarding described in number one.

(3) Men must be housed, fed, clothed, equipped with weapons and individual gear.

Materials Based on Navy Allowance Lists

The local Navy Supply Officer, in charge of the office and warehouse which is a link in the BuAer-BuSanda-ASO chain, funnels a 90-day store of bolts, tools, engine spares, into the shipping crates of the Group Quartermaster, and also honors daily requisitions. He is guided by allowance lists prepared on the basis of need and experience. Aviation materials for Groups and squadrons are based on the following Navy Allowance Lists:

(1) BuAer Tables of Basic Allowances, Marines: covers all standard items, tools, and shop equipment.

(2) BuAer Tables of Basic Allowances for Marine Air-Warning Groups: covers all Navy-furnished material for an air-warning unit.

(3) BuAer Tables of Basic Allowances for Carrier Air Service Divisions: material necessary for carrier based servicing unit.

(4) Section "B": Structural and accessory spare parts.

(5) Section "C": Engine parts.

(6) Section "G": Shop equipment for carrier based units.

(7) Section "K": Publications.

(8) Section "L": Aerological Material.

(9) BuAer Tables of Basic Allowances, Marines. Section "M": Vehicles and Allied Equipment.

(10) BuOrd Functional Components "J" Series: Aircraft ordnance servicing and maintenance equipment.

(11) BuAer Photographic Allowance List.

(12) Section "P": Gun cameras and Related Equipment for Combatant Type Aircraft.

General purpose bombs weighing 500 pounds are assembled in quantity, ready to give Dauntless dive bombers of the First Marine Air Wing on Luzon their bite.

(13) Section "R": Airborne Radio, and Test Equipment.

(14) Advanced Base Functional Components: equipment of a classified nature.

Marine Corps supply responsibility during the outfitting and training phase of a Group is centered in the Depots of Supply and the local Station Quartermaster. Volumes I, II, and III, Tables of Allowances, USMC, list the equipment allocated Aviation units, which is shipped by the Depots to the Group Quartermaster for Distribution to the Squadrons (occasionally retained in the Sevron) and packing for overseas movement. The Station Quartermaster issues transportation requests, clothing, subsistence, and housekeeping items to the unit. He furnishes sheets and blankets, but the bunks and mattresses are Navy responsibilities, as are erection and maintenance of the barracks. Confusing the issue still more, those Group Quartermasters based at Marine Corps Air Facilities (an Air Station Jr.) are assigned additional duty as Facility Quartermasters, with all those additional burdens.

As the Corps levels off at a new personnel high, tactical units will be absorbed overseas, and initial outfitting will no longer be required. The energies of both Navy and Marine supply will be directed toward maintaining and reequipping squadrons overseas, and supplying daily necessities to activities training replacement personnel within the continental limits. In the regions where V-mail is a staff of life, the Group Quartermaster sets to work replenishing his miniature depot, guided by policy established by the 4 Section of the staff, assisted in technical matters by the Materiel Officer. The Group Quartermaster is responsible for procurement, storage, issue, and accountability of all material. His stores are a prime target for enemy bombers, and light fingered Marines. For aeronautical items he contacts the nearest Naval Aviation supply activity, which may be an Aviation Supply Annex (ASA) or Depot (ASD) or Naval Aviation Supply Depot (NASD) whose shelves in turn have been stocked by the great continental Annexes and the ASO. If the smell of Jap is still in the air, he may turn to an aviation supply ship or barge, which drops anchor and begins business in lagoons hardly stilled from the turbulence of battle.

Supply Command and Supply Responsibility

Carriers will soon be launching Marine aircraft in close support of amphibious assaults. The ship based Navy Supply Officer will store and issue maintenance materials. Carrier based squadrons will probably fit very closely into the Naval Aviation supply system, and depend on the Marine Corps solely for clothing and individual equipment.

Throughout this article, supply "command" as contrasted to supply "responsibility" has been purposely neglected due to wide differences in various areas. Supply "command" may be defined as the authority which informs supply agencies regarding the requirements of an operation, and directs fulfillment of needs. Quartermasters must have the

answers to these questions if a campaign is to be successfully supported:

(1) What do you need?
(2) Where do you want it?
(3) When shall we ship it?
(4) How much will you use?

At strategic points along the pipelines of supply are located traffic officers, in various command posts, who direct and control the products of factory and Bureau. At the bend in the aeronautic supply pipeline leading to a squadron is the Group. Above that valve may be several adjusters: Island Commander, Marine Air Wing Commander, Sub-Area Commander, and Area Commander. At the master control is Commander, Aircraft, Pacific (ComAirPac), and the Commanding General, Aircraft, Fleet Marine Force, Pacific (ComGenAirFMFPac), who, in turn, are guided by the Commander in Chief, Pacific Ocean Area (CinCPOA). In the final analysis, the Commander-in-Chief (Cominch) and the Chief of Naval Operations (CNO) activate the immense machinery of the pipeline and its flow of material.

Marine Corps supply beyond San Diego is the responsibility of the Commanding General, Supply Services, Fleet Marine Force, Pacific (ComGen Sup ServFMFPAC), who works under the direction of the Commanding General, Fleet Marine Force, Pacific (ComGenFMFPac). The Commander-in-Chief, Pacific Fleet (CinCPac) is his immediate superior.

Each geographic area, each island and atoll, has evolved special procedures to meet individual problems of distance, shipping, and operations and requires attention beyond the limitations of space here imposed.

The key to understanding Marine Aviation supply is a realization that flying Leathernecks are an integral section of the Naval Aeronautic program, as well as being part and parcel of the Corps. Points of friction inherent in combining two supply systems are lubricated by the liaison staff work accomplished by materiel and quartermaster personnel at every level of command. The machinery of Marine Aviation supply usually runs smoothly and well, as any begrimed rifleman who watches fighters and divebombers pin-point enemy positions with explosives can testify. The work of supply personnel, though often unsung, is honored each time a plane is repaired, or a bomb is dropped. Their efforts behind the curtain provide the stage props and the costumes for our part of the war in the air.

Marine Aviation Ordnancemen Use Army Supplies

An Army supply system has been used successfully by the ordnance department of the First Marine Air Wing's dive bombers based in Luzon. This is the first time in Marine Aviation that Marine ordnancemen have used Army supplies for an extended length of time.

At the end of the first month of operation the ordnance crews, without a single accident, had worked around the clock to bomb and arm the planes each day. Ordnancemen were given little equipment during this period.

With the exception of trunnion bands and arming wires for bombs, the Army furnished the Marine ordnance depot with every item required the day after ground crews came ashore. Trunnion bands were available three days later, although the Navy continued providing the arming wires, which differ from those of the Army.

There were difficulties, of course. The hand work resulting from absence of trailers and "cherry pickers," the small cranes for lifting bombs, made night work with inadequate lighting facilities necessary. Early in the Luzon campaign difficulties were experienced with the M-41 bomb rack, which was designed for use on carrier planes. The dusty Luzon airstrip plus the constant strikes being made hampered the operation of the M-41 racks. The many strikes, made possible because of the closeness of targets, also made it necessary for ordnance crews to work at a feverish pace.

This same crew had established a good reputation for themselves in the Solomons, where the work of ordnancemen was more leisurely because of the distance of targets. While serving in the Solomons, the ordnancemen perfected three usable inventions. One was a hoist with which to load a 350-pound depth charge on an SBD bomb rack. Another was a cluster of three 100-pound bombs for use on a wing rack. Another invention was a box full of leftover gear such as fuses, bombs, and machinegun ammunition, which was used to bomb Jap gardens on Bougainville.

On Luzon, the ordnancemen worked in bomb dumps close to the airstrip, where there is constant danger from Jap aerial attack, bombs accidentally "hung up" on SBDs, and from planes that crash land and explode. Ordnancemen also had the job of disposing of "hung" bombs and dud projectiles.

Rewards are rare for the physically hard and dangerous work of the ordnancemen, but the results of their labors apparently are reward enough. One of them expressed it thus:

"To us, a field of trailers loaded with bombs is one of the most inspiring sights in the world." By S/Sgt. David C. Stephenson, Marine Corps Combat Correspondent.

Combat Headache

Administrative annex proposed to solve problem of supply on initial landings

By Lt. Colonel L. C. Hudson

This article outlines the form to be used in solving one of the most difficult problems in amphibious warfare — the initial supply of assault troops. The author does not endeavor to explain the duties and responsibilities of the Shore Party in this phase of the ship-to-shore movement.

AFTER functioning as battalion commander in an assault regiment in four operations, there remains with me one problem of troop leading which appears furthest from solution: supply in initial phases of a landing. There is not enough detailed thought and discussion given to it. Recently there appeared an article in the Marine Corps GAZETTE which went into great detail in a discussion of the proper method of preparing landing team orders* but dismissed supply with a few sentences which said, in effect, "follow FM 101-5." There you have a good basis, but for insuring supply by giving essential detailed information to all elements, it is merely a sketchy outline. This article deals merely with a form, a proposed administration annex, which, if worked out conscientiously and supervised, will take care of actual needs. Recommended changes are welcomed, any criticisms pro and con, and it is believed that if such appear in these pages many officers concerned with detailed planning will benefit. Following are extracts from administrative order:

I. Administrative Instructions Regarding Landing Phase

1. UNIFORM: Utility or camouflage (brown side out). Leggings as desired.

2. EQUIPMENT: a. — Individual: Normal arms with waterproof covers, gas mask, two canteens, packs as desired, steel helmet, camouflage covers. On order of RCT Comdr, clothing rolls, bedding rolls, and shelter half roll secured to knapsack will be landed. Each squad will lash and tag shelter half rolls, providing for compactness and easy recognition.

b. Organizational: To be landed as specified in loading plans.

3. RATIONS: 2/3 "D," 1/3 "K" per man.

4. WATER: a.—Per man: 2 full canteens.

b. Per jeep: 4 cans. (Total 140 gallons.)

c. QM trailers and 1-ton truck: Total 100 gallons.

d. Regt Wpn Trk: 96 cans (Total 480 gallons).

5. AMMUNITION: (see chart on next page).

6. UNLOADING: a.—The following unloading details are designated:

Hold	Officer in Charge	NCO Asst.	Detail
1	Lt. ABLE	Pl. Sgt. EASY	20 men, Repl. Co.
2	Lt. BAKER	Pl. Sgt. FOX	20 men, Repl. Co.
3	Lt. CHARLIE	Pl. Sgt. DOG	20 men, Repl. Co.
4	Lt. DOG	Pl. Sgt. GEORGE	20 men, Repl. Co.

b. Initial cargo handling teams in ship's boats and boat loads are designated as follows:

LCVP No.	Name	Cargo
13	Pfc. HOWE	3 cases, Cart., Cal. .30 (5rd).
	Pvt. ITEM	5 cases, Cart., Cal. .30 (8rd).
		1,500 Cart., Cal. .30, Belted.
		130 Shells, 60-mm Mortar, Ill.
		500 Shells, 60-mm Mortar, HE.
		50 Rockets, AT, 2.36", M6.
		10 Mines, Anti-personnel.
		2 Cases Grenades, hand, fragmentation. (Etc., etc.)
		350 Shells, 81-mm Mortar, HE, M43A1.
		50 Shells, 81-mm Mortar, WP, smoke.
		10 Bundles Sand Bags
		1 Box Communication gear
		1 Box Medical Supplies
14	Pfc. JIG	(Same contents as LCVP No. 13)
	Pvt. KING	

*"*Battalion Landing Teams in Amphibious Operations," by Lt. Col. Robert E. Cushman, Jr., GAZETTE, Jan., 1945.*

NOTE: Boat signs carrying these numbers will be displayed from boats. Two men assigned each boat carrying cargo will remain therein until all cargo is discharged, at which time they will rejoin their units aboard ship. Co. "X" to provide one platoon to transfer supplies from boats 13 and 14 to LT ammunition dis. point. 81-mm Mortars will provide ½ platoon for the same purpose.

7. EVACUATION: Casualties during ship to shore movement remain in boats for return to ship.

II. Administrative Instructions for Operations Ashore

1. SUPPLY LEVEL: It is contemplated that certain materials in the LT supply point will permit the following distribution:

To each rifle company by nightfall daily:
- 1,500 Cart., Ball, Carbine
- 4 Cases, Cart., Ball, Cal. .30 (5rd)
- 8 Cases, Cart., Ball, Cal. .30 (8rd).
- 1,500 Cart., Tracer, Cal. .30
- 36,000 Cartridges, belted, Cal. .30
- 600 Shells, 60-mm Mortar HE, (etc., etc.)
- 1 Can Detonators, non-electric
- 3 Flamethrowers, replacements, filled
- 3 Can Ignition Cylinders.
- 5 Bundles Sand Bags
- 5 Phones, SP
- 1 Breast Reel
- 10 Flares, green star
- 45 5-gal. Water
- 1 Ration per man

To the 81-mm Mortar Platoon:
- 1,200 Shells, 81-mm Mortar, HE, M43A1
- 80 Shells, 81-mm Mortar, WP, Smoke

Ammunition	Riflemen (424)	Carbineers (458)	60-mm Mortarmen (3 sec.)	81-mm Mortarmen (38)	BMG Gnrs. (54)	Rocketeers (9)	Each Indiv. (958)	W.P. Grenadiers (80)	Handcarts Jeep Trailers	1-Ton Truck	TOTAL
Cart., Ball, Carbine											
Per individual	....	75	....	....	....	....	....	....	3,000	3,000	....
Totals	....	34,350	....	....	....	....	....	....	9,000	3,000	46,350
Cart., Carbine, for grenades											
Per individual	....	3	....	....	....	....	....	....	....	....	270
Totals	....	270	....	....	....	....	....	....	....	....	275
Cart., Ball, Cal. .30, belted											
Per individual	....	....	....	....	500	....	....	....	....	....	....
Totals	....	....	....	....	27,000	....	....	....	40,500	4,500	7,500 79,500
Cart., Ball, Cal. .30, 8-rd.											
Per individual	88	....	....	....	....	....	....	....	....	....	....
Totals	37,312	....	....	....	....	....	....	....	45,000	....	82,312
Shell, 60-mm Mortar, HE, M49A2											
Per individual	....	....	12	....	....	....	....	....	....	....	....
Totals	....	....	432	....	....	....	....	....	324	....	756
Shell, 60-mm Mortar, Illum	....	....	....	....	....	....	....	....	....	180	 180
Shell, 81-mm Mortar, HE, M43A1											
Per individual	....	....	....	6	....	....	....	....	....	....	....
Totals	....	....	....	228	....	....	....	....	144	80	 552
Shell, 81-mm Mortar, Smoke, WP	....	....	....	....	....	....	....	....	....	30	 30
Rockets, AT, 2.36", M6											
Per individual	....	....	....	....	....	10	....	....	....	....	....
Totals	....	....	....	....	....	90	....	....	60	....	 150
Grenades, AT, M9A1											
Per individual	3	3	....	....	....	....	....	....	....	....	....
Totals	315	210	....	....	....	....	....	....	30	....	 555

(etc., etc.)

For general issue: 1 ration per man, plus fruit juices as available. ½ Gal. water per man

2. SUPPLY PLAN: a. All companies and corresponding units forward requests to Bn-4 by 1500 daily.

b. Transportation will be controlled as follows:

Vehicle	Driver	Ass't Driver	Responsible Officer
TCS #1	ABLE	BAKER	Comm. O.
TCS #2	CHARLIE	DOG	Comm. O.
Ambulance	EASY	FOX	Lt. Medical O.
Jeep #1	GEORGE	HOWE	Lt. SUGAR
Jeep #2	ITEM	JIG	Lt. SUGAR
Jeep #3	KING	LOVE	Lt. SUGAR
Jeep #4	LOVE	MIKE	Lt. SUGAR
Jeep #5	NAN	OBOE	Lt. SUGAR
Jeep #6	PETER	ROGER	Lt. SUGAR
1-Ton Truck	TARE	VICTOR	Lt. SUGAR

c. Each driver, upon completion of mission, will report back to his officer in charge for further orders. All drivers, other than the TCS and ambulance, are ordered by the LT Comdr to take orders only from the LT QM or his representative in the use of vehicles for transportation purposes ashore.

d. The following are assigned the duties that are indicated below:

Name	Duties
T/SGT ABLE	Asst. to Bn-4 in food and water control.
ACK. BAKER	Asst. to Bn-4 in food and water control.
FLDCK CHARLIE	Asst. to Bn-4 in food and water control.
ACK. DOG	Asst. to Bn-4 in food and water control.
S/Sgt. HOWE	Asst. to Bn-4 in ammunition control.
CCK. EASY	Asst. to Bn-4 in ammunition control.
ACK. FOX	Asst. to Bn-4 in ammunition control.
ACK. GEORGE	Asst. to Bn-4 in ammunition control.
PLSGT. ITEM	Asst. to Bn-4 in flame thrower repair and refuel.
FLDCK KING	Asst. to Bn-4 in flame thrower repair and refuel.
PFC. LOVE	Asst. to Bn-4 in salvage.

MT/Sgt. MIKE and Pvts. OBOE, PETER, AND ROGER are responsible for spotting and guiding all supplies to the LT dump. The knapsacks, clothing rolls, and bedding rolls left aboard ship will come under control of these men when unloaded.

3. EVACUATION: (Etc., etc.)
4. MEDICAL: (Etc., etc.)
5. SHORE PARTY: (Etc., etc.)
6. PERSONNEL: (Etc., etc.)
7. BURIAL: (Etc., etc.)
8. SALVAGE: (Etc., etc.)

III. Administrative Instructions Regarding Withdrawal from Target

(As specified by higher echelon.)

The work underlying the detailed preparation of such an order will require many hours of study and thought. How different it is from stating that "two units of fire will be landed" and then leaving the details of allocation of amounts to carry on the person, amounts to bring ashore in vehicles and amounts to be brought ashore in bulk, to the imaginings of several echelons of QM personnel. However, when you check on the supplies ashore on D-day night it will be found that such preparation paid dividends. At that time it is too late to blame the Bn-4 for something you did not supervise.

It is earnestly desired that additional articles on this and related subjects be submitted, in order that there may be a liberal exchange of information on this exceedingly difficult and ever impending problem.

Corps Artillery of the Army in Combat—4

Use of the observation battalion, displacement, and basic security.

By Col. E. M. Edmonson

This is the final article of an authoritative series describing United States Army procedure concerning the organization and operation of Corps Artillery in Combat. Differences with Marine Corps practices, as well as points of similarity, will be noticed.

MOVING warfare necessitates the performance of much counterbattery by division artillery. Units of the Observation Battalion can frequently assist the divisions in counterbattery work prior to the employment of the corps artillery. These units should not be attached to divisions except in special operations such as landing operations or when a division is going on a separate mission out of supporting distance from the balance of the corps. When attachments are made a complete sound and flash ranging battery should be attached and the following should be observed:

1. Observation commanders should be assigned missions rather than be instructed in the technique of the operations of their unit.
2. Division artillery communication officers must include the observation unit in his communication plan.
3. Officers of the observation unit should not be used to supplement division artillery staff officers for the purpose of performing routine duties about the division artillery command post.
4. The observation commander should receive early information of plans for the employment of the division artillery, otherwise he cannot be expected to intelligently support the plan.
5. Observation units should not be committed to position until their need has been definitely established. Continuous reconnaissance and survey of prospective positions should be carried out but the positions should not be occupied until the situation warrants.

Generally, the observation battalion should be given the mission of supporting one or more divisions. On such occasions suitable personnel and equipment will be allotted for accomplishing the mission. When units of the observation battalion are a part of a supporting corps artillery group, the facilities of such a unit are available to the divisions through the group headquarters.

Normal missions should consist of the following:

1. Location of enemy targets by means of sound or flash.
2. C. I. Registration by flash ranging intersections.
3. Conduct of fire by sound or flash ranging.
4. Exercising general battlefield surveillance.
5. Providing the best survey control that time and the situation warrant.

The operations of an observation battery supporting a division will be discussed as an example.

The observation commander should seek early information about the situation and plans for the employment of the division artillery, including the survey plan. Based on the foregoing information he plans the employment of the sound, flash, and survey platoons.

The observation battery should provide all of its internal communications, but will depend on the division to provide the communications to the battery CP. Normally a line will be laid from division artillery switchboard to the battery CP.

Reports from the sound and flash platoons will be coordinated at the battery CP and passed on to the division artillery S-2. If a fire mission is assigned, the division artillery S-3 notifies the observation commander, who arranges communications between the observing platoon and the FDC of the firing battalion. Normal procedure for conduct of fire and C. I. Registration is shown below:

General

Inasmuch as locations are made on the division grid, surprise fire is sought without adjustment. The observing platoon will attempt to check results so that corrections may be made where necessary.

Flash C. I. Registrations are frequently used prior to transfer of fire to important targets.

The sound platoon can check results under favorable conditions by sensing a battery salvo fired at four-second intervals following the fire for effect. In reporting targets to division artillery, the battery commander will indicate estimated accuracy of locations and recommend the method of conducting fire.

Procedure

1. Mission assigned by division artillery S-3 to observation battery commander as follows:

"Fire mission, your target No. ..... is concentration No. .....

Fire ..... FA Bn."

Observation battery commander gives necessary instructions to sound or flash platoon commander.

2. Platoon commander contacts FDC of battalion concerned and says, "Sound (or flash) Fire mission ..... FA."

Swithchboard operators leave connection plugged through until "End of mission" is received from platoon commander.

3. FDC says, "Go ahead."

4. Platoon commander says,

"Conc No. ....., enemy battery, X....., Y....., can check."

5. FDC prepares data and says,

"Time of flight ..... seconds."

"Starting fire for effect."

"Fire for effect complete."

6. Flash platoon will give sensing on fire for effect, or sound platoon commander will say,

"Fire battery right at four-second intervals at center range and report 'on the way.'"

7. Sound platoon commander reports sensing, rings switchboard and repeats several times, "End of Mission." Communication is broken.

Conduct of C. I. Flash Registration

1. Missions are assigned by means of a schedule issued by division artillery S-3.

2. Registration initiated by flash platoon commander in accordance with the schedule.

3. Flash platoon commander calls FDC, saying, "Fire Mission ..... (telephone code name)."

4. Upon receiving "Fire Mission," FDC replies "Go ahead."

5. Platoon leader (Obsn) reports,

"Ready to register."

6. FDC says:

"Check point X..... Y..... Z.....

"Report when ready to observe. Time of flight ..... seconds."

7. Platoon leader says,

"Fire one round."

8. FDC causes round to be fired, reports, "On the way."

9. If round is properly observed, platoon leader says,

"Continue registration." Otherwise, he calls for another orienting round.

10. FDC causes four rounds to be fired at one minute intervals and reports "on the way" for each one.

11. Platoon leader reports,

"C. I. X..... Y..... Z....."

12. Platoon leader rings switchboard and repeats several times, "End of Mission." Communication is broken.

Displacement of Battalions and Groups

Corps artillery displaces on order of the corps artillery commander, and the coordination of fires laterally and in depth must be maintained during displacement.

When corps medium battalions displace forward they seek positions far enough advanced to enable them to take over the mission of the long range general support artillery. When this displacement has been completed, general support long range artillery should displace well forward and extend their range as far as possible beyond that of the medium artillery. Displacement instructions should always include the Y-azimuth of the center of the zone of fire to be covered.

Reinforcing artillery institutes reconnaissance when the reinforced unit institutes such reconnaissance. Energetic action and early recommendations are expected of reinforcing battalions and groups. Light and medium artillery cooperate by avoiding positions favorable for heavy artillery. All personnel cooperate by reporting important terrain observation to higher headquarters.

A battalion reinforcing a direct support battalion coordinates its displacement with the direct support battalion. The latter may continue fire direction in the old position until its displacement is completed, or communications may be arranged by which the reinforcing battalion takes over fire direction while the direct support battalion displaces.

Reconnaissance of corps battalions having a general support mission only as instituted by the corps artillery commander.

Displacements must be cleared with traffic control agencies set up by divisions and corps and every officer should be responsible for correcting traffic congestions on the spot. This does not mean that they should supersede control being exercised by the military police but it does place upon them the responsibility for direct and aggressive action at obstructions.

Communications

The corps signal battalion should be responsible for wire circuits from the corps command post to the corps artillery command post. Two circuits should be established.

The corps artillery is responsible for its internal communications, and for establishing communication with reinforcing TD, Tank and AA units. Other reinforcing units establish communications with the supported unit.

As many alternate wire circuits should be provided as time and facilities will allow. The general principle is that a higher headquarters lays wire to its subordinate units.

The corps artillery headquarters battery should, in addition, establish one or more forward switching centrals, to one of which each corps battalion lays a line. Each division artillery, combat command, etc., should also lay a line to one of these centrals. These lines are in addition to the normal wire communications each reinforcing unit establishes with the reinforced unit, and provide an alternate means of communication. In addition a great deal of flexibility is obtained, laterally and in depth. Fire missions may go from forward observers directly to corps battalions, and to corps battalions from the corps artillery FDC.

Radio communications are somewhat more complicated and will depend upon the sets that are

involved and also upon the channels allotted.

Communications should be set up so that any artillery observer can contact any corps battalion on a common channel without taking over the fire direction net of an intervening headquarters. Cub planes should be able to do this also.

The observation battalion must be tied in with wire and radio, through switching centrals and common radio channels so it is able to adjust any corps battalion by flash or sound.

The 193 radio, now authorized for each artillery battalion and artillery headquarters battery, is best utilized for the massing of corps and division artillery fires on targets of great importance, and for antimechanized, antiaircraft warning net. It can be put to other uses upon occasion.

The normal corps S.O.I. does not usually meet the needs of artillery units, which change their role frequently, and are shifted from one part of the front to another quite often.

Signal instructions which are common to all artillery with the corps facilitate the massing of artillery fires and simplify the task of reinforcing units. One corps used very successfully in combat a "Field Artillery Communications Instructions" which was used by all artillery with the corps and by reinforcing TD, Tank and AA units. Field artillery communications instructions are based upon the corps S.O.I., but amplify the latter and tie all artillery units together, both laterally and in depth.

Cub landing fields should be tied in by radio to the antiaircraft warning net. Landing fields can contact cubs on flight through their own radios.

Thus the ground net consisting of forward and static field artillery observers, and the air net, consisting of planes in flight, radar, etc., are utilized to warn the cubs of hostile aircraft. This system proved very effective on the Anzio Beachhead, where many cubs which received early warning of hostile aircraft deliberately lured them into heavy antiaircraft fire sited for that purpose.

Security

Security, like fire planning and observation, works from front to rear and must be finally coordinated by the highest headquarters involved. In some theaters the artillery commanders in each echelon are designated as antitank officers. This was so in the Italian Theater.

Basic security measures include the following:

1. Alternate artillery positions should be selected and surveyed.
2. Position should be camouflaged, dispersed, and dug in with the view of protecting personnel, materiel and ammunition.
3. Strict camouflage discipline should be maintained at all times.
4. Roving guns should be employed to deliver harassing fire.
5. Pieces should fire occasionally from alternate positions.
6. Artillery units should be responsible for the close-in antitank defense of these positions.
7. Defense should be coordinated between adjacent units.

Each antitank officer should require from units for whose coordination he is responsible an overlay of appropriate scale showing:

1. Mines to be laid.
2. Demolitions and prepared demolitions.
3. Tank obstacles to be constructed.
4. Location and fields of fire of antitank guns.
5. Plans for the employment of TDs.
6. AT fields of fire of artillery units.
7. AT fields of fire of AA artillery.

A truly coordinated defense will require considerable readjustment of initial positions and fields of fire particularly along boundaries. This can only be done when the highest headquarters knows what measures have been taken initially.

In addition to the overall security measures each artillery unit and installation should work out a perimeter plan of close defense. The perimeter plan depends entirely upon the terrain and enemy tactics. However, a basic plan and SOP should be formulated around which a specific plan can be developed for any particular situation.

The basic plan of perimeter defense should be modeled upon infantry defensive tactics in a final defense of a position. This includes combat outposts, sentry posts, assembly points for riflemen, prepared positions for weapons and predetermined fields of fire, mines, booby traps, antitank obstacles, trip wires, etc.

It may be necessary to reduce the perimeter at night and move flank pieces into the perimeter. All personnel should have foxholes or slit trenches to occupy during darkness.

Patrols should search all around the perimeter just before dark and all men should be in their designated places before dark. During the night fire discipline should be very strict. Men should be trained to stay in their foxholes no matter what happens and depend upon the all around defense to protect their flanks and rear. Silence, immobility, and camouflage are the best weapons. Men must not be tricked into giving away their positions by firing on fake or diversionary attacks.

Reports

No unit should be burdened with unnecessary reports, and especially no unit should be called upon to compile data that are available in the files of the headquarters calling for the report. However, regulations require certain reports to be submitted and the necessities of combat call for certain others.

The following enemy information should be reported immediately to the corps artillery fire direction center by the most practicable channel. Reports should contain the details prescribed when available. Maximum use should be made of prearranged codes.

Nature of Information	Classification of Message	Information to Be Included
Air Attack	Urgent	Location, time, strength and opposition, identification, type of attack, casualties and materiel damage.
Airborne Attack	Urgent	Location, time observed, direction of a movement, estimated speed, strength and composition, identification.
Armored or Mechanized Attack	Urgent	Location, time observed, direction of a movement, speed, strength and composition, identification.
Hostile forces in strength	Priority	Attack or approach, location, time observed, direction of movement, speed, strength and composition, identification.
Enemy Artillery Fire Observed	Priority	(Shell Report Form)
Use of Chemicals by Enemy	Priority	Location, area covered, time, persistent or non-persistent, how laid down, casualties.

Other reports required by regulation or of assistance to the corps artillery are:

Name of Report	By Whom Made	Time Submitted
Calibration	Bns thru Groups, Corps Arty only	Upon attachment
No Fire lines	Div & similar units	When designated
Fire capabilities	Groups & Div Artys	Upon occupation of position
Location of CPs	Groups & Div Artys	As established
Location of OPs & Zones of Observation	Groups & Div Artys	As established
Location of flash & sound bases	Groups & Obsn Bns	As established
Summary of Observer Reports	Groups & Div Artys	12-hour periods ending 1800 and 0600
Location of landing strips	Groups & Corps Arty	As established
Periodic S-3 Reports	Groups & Div Artys	Daily for period 1800-1800
Counterbattery Firing	Groups & Div Arty	Immediately
Countermortar Firing	Groups & Div Arty	Immediately
Ammunition Status Report	Groups & Div Artys	Daily
Malfunctions	Bns thru Groups & Div Artys	When they occur
Cub missions	Air Sections	Daily
End of Campaign Reports	Bns, Groups, Corps Arty	As called for

Conclusion

From the foregoing it can be seen that corps artillery properly organized and employed is a powerful and flexible force available to the corps commander and of great assistance to division commanders.

This is not always understood by division commanders who sometimes think that artillery not under their own control exercises little influence upon their operations.

The reverse is often the case. Many times artillery fire is massed and swung from area to area of the battlefield by the highest headquarters involved simply because communications have broken down in the lower echelons or because they are out of touch with the general tactical situation.

This can be done only by a complete prearrangement which will cut down the complexity and length of telephonic and radio communications and which will result in massed artillery fire when needed, were needed, and in the volume necessary.

Early Marine Landing on Okinawa

Marines made their first landing on Okinawa 92 years ago, on May 26, 1853, when Commodore Matthew C. Perry's squadron, en route to Japan to open that country to trade, made port there. Okinawa, then known as "Great Lew Chew," the largest of the Lieou Kieou Islands, was a necessary step en route to the Japanese mainland then as now.

When the regent of the island came aboard Commodore Perry's ship, Marines were turned out in full regalia to impress the islanders. A report of the event stated that a salute of three guns rendered at the time so startled the regent's party that some of their officers dropped to their knees. When Commodore Perry returned the regent's visit on June 6, Marines in full dress uniform made quite an impression on the natives, who "did not manifest the smallest apprehension."—Condensed from an article by Capt. Frank O. Hough in the *Quantico Sentry*, April 19, 1945.

To the Editor

DEAR SIR:

The article by Major Richards on Jungle Patrolling in your January, 1945, issue differs vastly from what I have found to be correct procedure.

Let us start off with the picture on page 69.* The men are not in correct uniforms. All members of a patrol *must* wear the same headgear. For quick identification, one looks instinctively at the head of a person suddenly encountered. Steel helmets or helmet inserts are best. Never wear jungle caps, they look too much like Jap Army caps. Never allow men to be in dissimilar uniforms, or to roll up their sleeves. A small scratch means a jungle ulcer. All men must wear leggings. Correct uniforms are necessary for positive identification of friendly patrols.

Now as to weapons: We have found that it is not practical to take light machineguns, 60-mm mortars, and radios along on patrols. Radios blank out after the first hour, and slow the patrol if the going is rough. Headquarters just has to make up its mind to trust the patrol leader until the patrol returns. He has enough to do anyway without trying to estimate his pin point position every 15 minutes for someone back in the CP. And you can't use 60-mm mortars; just imagine trying to set up a mortar in thick jungle after you are ambushed! By the time the mortar is set up, the fight is over; and of course there is the problem of finding a clearing. BARs do the job of the LMG, which is awkward to carry. In general, a weapon which cannot be carried in the hands and fired immediately is not valuable for patrolling.

Unless you are hit hard, you must not withdraw. If you don't get in fast, the enemy will change position and you will lose contact.

As to talking, there must not be any conversation except when giving orders, and these have to be given in a whisper until a fight starts; then it is sometimes necessary to shout. Forget about flankers; you can almost never use them.

Now for the dogs. Dogs have many limitations; they are not suitable for staying out overnight because they usually bark or whine. Dogs get tired and nervous faster than do men. Dogs are not effective as messengers on patrols. Scout dogs help on daytime patrols if they are fresh, and if no friendly patrols have been in the vicinity of the patrol area. Dogs should not be kept in a Marine bivouac area. They raise cain at night, get lazy and disinterested, and their sense of smell becomes confused.

One doesn't post sentries at night, on a patrol in the jungle, when the enemy is known or thought to be in the vicinity. It is usual for the men to stand watch and watch *in their foxholes.* Anyone seen moving about above ground is considered to be enemy.

Nothing was said about the most important thing concerning the health of the men—equipment to be taken along. A shelter half is better than a poncho, because it is larger and is water-proof. The haversack carries chow, (Campbell's beans from the PX, candy, chewing gum, beer; anything except issue emergency rations), extra pairs of socks, foot powder, and a dry shirt for sleeping. Each man should take an extra field dressing, his rifle cleaning gear, ammunition, grenades, and two or three canteens.

Nor was anything mentioned concerning native guides. Native guides, if certified as reliable by native commissioners, head men, or other persons known by us to be trustworthy, can be of great help. They know where the enemy will seek food and water, and where paths intersect. Unless the trail is too indistinct, put a man in front of the guide. Give your guide plenty of rest, including Sundays off where possible, and try to have another native or two at the base camp for him to talk with at night. Instruct your men to be friendly, but not familiar with, native guides.

Patrol reports are very important. The leader must report to the Battalion CP immediately upon his return. He must report number of enemy encountered, time, approximate position, how armed, attitude (aggressive or non-aggressive), branch of service, number killed or wounded, and strength. This information, together with his route, is forwarded on an overlay to higher headquarters. It is not necesary for all patrols to be led by an officer. NCOs do surprisingly well when given the responsibility and authority of a patrol leader. We have even used PFCs with excellent results.

PAUL JONES, MAJOR, *USMC.*

Concerning the foregoing, Division of Plans and Policies, Headquarters Marine Corps, says:

As to the use of light machineguns and 60-mm mortars by patrols, the arms with which the patrol is equipped depend upon the mission of the patrol. If the mission is combat, light machineguns and 60-mm mortars should be used.

Using or not using a radio on patrol depends upon the mission of the patrol, the distance that it is to operate from the front lines, and how long the patrol is to be out. By taking a radio along the patrol frequently, in addition to relaying information, and so on, is enabled to call for artillery for its own protection and for engaging lucrative targets of opportunity.

*The illustration used with this article was a combat photograph showing a Marine patrol pushing through the New Britain jungle. Major Richards was not responsible for its selection.—ED.

An Airfield Is Put in Operation

Working under fire and against time, the Second Separate Engineer Battalion built a vitally needed air base on Orote Peninsula which is now harassing Tokyo. *By BM 2/c W. B. Gore*

IT WAS necessary to put West Field, on Guam, into useful operation as soon as practicable after the peninsula was secured by assault forces. The Commanding General of the assault force assigned this task to Lt. Colonel Charles O. Clark, Commanding Officer of the Second Separate Engineer Battalion.

On July 30, eight days after D-day, Lt. Colonel Clark was informed that the peninsula had been cleared of all organized resistance. He issued the order to place men and equipment on the strip to clear away the rubble of battle, do the necessary grading, and repair bomb and shell craters so the field could receive planes.

On D-day, the Battalion had to start getting its supplies ashore on a beach several miles away from the anticipated scene of construction activity. This was accomplished by bringing LSTs, on which most of the heavy equipment was loaded, up to coral reefs that surround the larger portion of the island, and transferring cargo to DUKWs and tractor-propelled vehicles of all types. Portions of small equipment and supplies were carried by personnel on their backs.

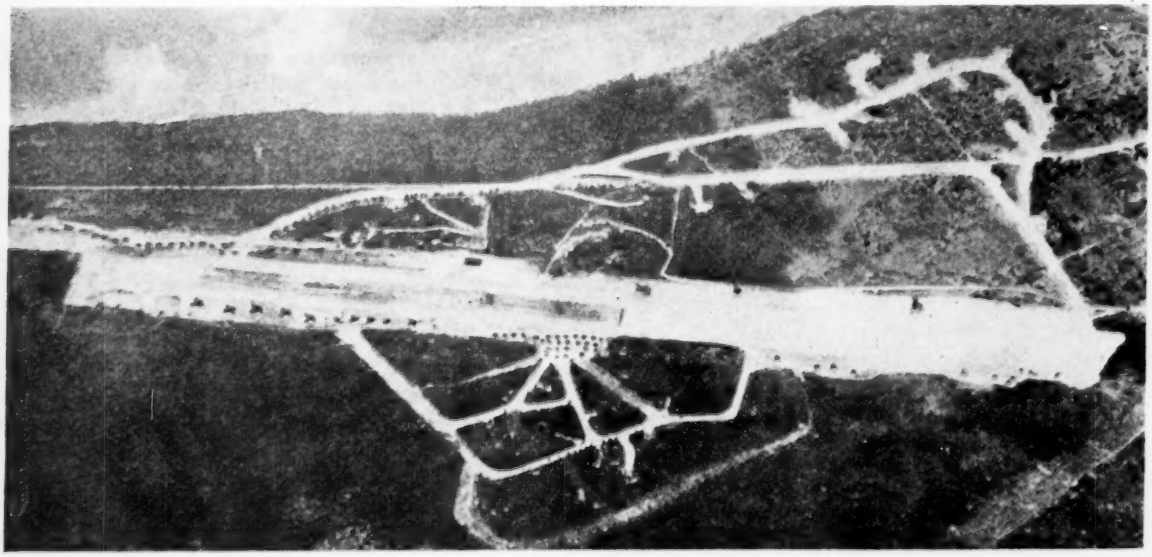
Drums of gasoline, fuel, and water were simply pushed into the surf and rolled onto the beach by hand. This was a fairly simple matter insofar as drums of gas were concerned. Being lighter than water they rode high enough to make it easy to push them. With diesel fuel and fresh water, however, the barrels had to be rolled through the shallow salt water over slippery, uneven coral beds.

A small shovel, rigged as a crane, greatly facilitated the lowering of deck loads onto DUKWs and, at low tide, into tractor-pulled trailers and trucks. Unloading continued on a round-the-clock basis for seven days, except when the almost continuous enemy mortar and artillery fire became so intense the beach engineer thought it prudent to secure the detail for temporary periods. Unloading of supplies was accomplished four hours ahead of schedule.

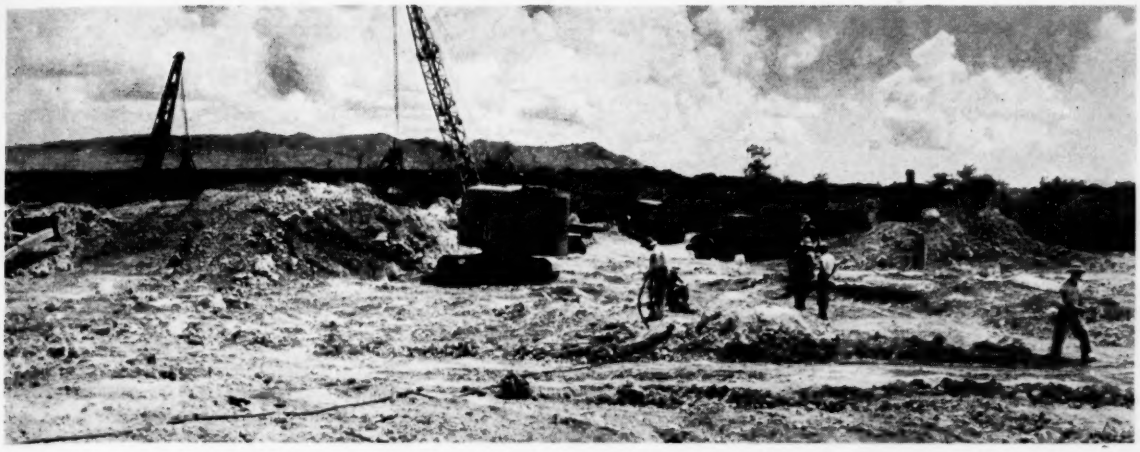
Working in a Hazardous Area

As soon as sufficient equipment was on the beach it was put to use clearing roads and cargo-sorting areas, and building finger piers to expedite unloading of combat supplies. This work was of a particularly hazardous nature since it was in an area mined with bombs and ingeniously rigged booby traps. Sniper and mortar fire was a constant menace, and several casualties, both of men and equipment, resulted during this period.

A field aid and evacuation unit from the Battalion was established on the beach, and operated under heavy enemy fire. It was manned by seven corpsmen and a doctor. This was the only aid and evacuation station on the beach at this time, and



Aerial view of Orote Field while under Japanese control. Only part of the runway was improved. None of the taxiways shown were used in laying out the new field.



Huge quantities of coral were necessary to top the strip. It was taken from a grade at the west end of the field, shown here. At right center, operators drill for blasting.

more than 300 patients from the Battalion and various other units were treated there on a single day. While at this station many of the patients received additional wounds from accurately placed enemy mortar fire.

At 0800 on July 30 equipment was moved onto the field and the work of rehabilitation was begun. At 1600 the same day, the field was declared in condition to receive its first TBF, which landed at 1650. Earlier, a light plane used for observation had rolled to a stop on the hastily reconditioned airstrip.

Meanwhile, field kitchens, water, and food had been brought to the bivouac area on the eastern perimeter of the field, and most of the personnel had their first taste of hot food since D-day.

At this time approximately half the field, in a westerly lengthwise direction, was subject to sniper and machinegun fire. One company had to be used in defensive positions around the area to ward off expected banzai attacks by the remaining Japanese troops on the peninsula. On one occasion they took the offensive to push back a concentration of enemy snipers and machinegunners located in surrounding dense growth and caves.

Vigilance Minimizes Sniper Casualties

Due to heavy guard and patrol activity, casualties were kept low during this stage, although equipment was hit on numerous occasions by snipers. There was no serious damage. One bulldozer operator caught a sniper's bullet in his pack, which lay directly behind his seat. His canteen was punctured. Another, operating a grader working close to heavy undergrowth, received shrapnel wounds from a hand grenade.

Equipment available to the Battalion consisted of three 3-8 yard and two 3-4 yard shovels; two 5-ton tandem and three 10-ton 3-wheel rollers; six TD-18 bulldozers; two tractor-pulled graders and six motor patrol units; twenty-five 2½-yard dump trucks; eight carryalls with an 8 cubic yard capacity; one small machine shop located in a housed-in trailer; air compressors; jack hammers and welding equipment. In addition an electromagnet pulled by a rubber-tired four-wheel tractor was used to pick up small pieces of shrapnel and other metal objects.

During breakdowns, of which there were many, repairs had to be effected on the spot. Only one piece of equipment had to be written off as a complete loss during the entire operation. This was a bulldozer which exploded a land mine, seriously injuring the operator and killing five men working in front of the machine. The explosion tore off the tracks and damaged the engine beyond repair, but parts salvaged from this machine were used in repairing other earth-moving equipment of this type. Most of the repairs, however, were

A tremendous amount of toppings, coral, and labor was required to fill taxiways.

Installing valve on aviation gas pipeline near damaged Pan-American Airways offices.

minor items, such as bent 'dozer blades and truck maintenance. Incidentally, the Battalion equipment, with the exception of a few new trucks, had been used in a previous military operation and some of it had as much as 22 months' service.

Personnel at this stage presented a serious problem. Men had gone at full speed the preceding week, working sometimes 18 hours and more a day. Sleep was taken in hastily dug foxholes whenever possible, but it wasn't unusual for the Battalion to be alerted several times during the night, forcing the men to take defensive positions and maintain guard patrols.

It was considered, however, that only by working a 12-hour shift could the initial phase of the first operation be accomplished. This shift was continued for a period of two weeks, then shifts of six hours were inaugurated. This kept the maximum of equipment in use and at the same time gave the men a much needed rest period.

Airstrip Completed Ahead of Schedule

Engineers had estimated five days as sufficient time to widen the runway to 300 feet, cover the strip with a fresh topping of coral, and roll it into condition to receive the squadrons of 111 planes expected. But, by the expedient of pushing equipment and men to the utmost, and despite periodic delays due to sniper fire, the strip was inspected and pronounced completed as planned on the third day of operations, two full days ahead of schedule.

Coral necessary to top the strip was taken from a grade at the west end of the field, which had to be blasted, removed by use of dragline and bulldozers, and hauled by trucks. At the same time, by use of motor patrols, carryalls and 'dozers, the strip was being progressively widened, which facilitated the parking and repairing of idle planes along the edge of the field.

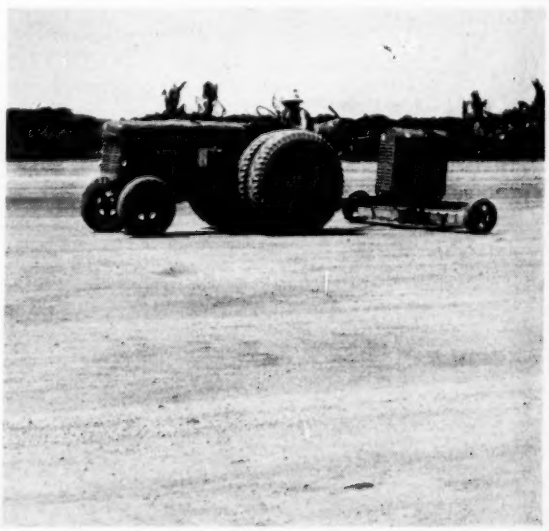
Motor patrols and graders used in maintenance of the field, when not in use on the landing strip due to heavy landing and takeoff traffic, were put in use grading the shoulders, which were widened by easy stages to an overall width of 550 feet. It was necessary at this time to add an extra shift for maintenance work at night, since during the hours of darkness air traffic was at a minimum.

Meanwhile, the runway was being extended, according to Phase Two of the original plan. Several hundred feet of the extension was added to the field, which necessitated a cut and removal of 117,000 yards of coral through a grade from zero to 15 feet. Earlier, the Japanese also had started an extension, which was approximately 75 feet in width and 300 feet in length.

Toppings and coral removed from the cut also were used as fill in the elaborate taxiway and hardstand system being inaugurated, which formed a rough diamond shape. Eventually the Battalion completed 21,000 feet of taxiways averaging 150 feet in width with finished top of 12-inch coral 50 feet wide. Cross-field taxiways of the same standard were constructed connecting the outer taxiways.

Terrain surrounding the field made the work on the taxiways a comparatively simple matter, although there were two 1,000-foot stretches that had to be filled in to the extent of as much as 10 feet. Bulldozers and carryalls were used in the initial clearing and scraping. The rough coral was then ground and crushed by bulldozers and placed on top of the scraped areas. This was finished off with machine crushed coral, leveled by graders, wet down when necessary, and rolled to a hard surface.

Hardstands were constructed in much the same



An electromagnet was used to pick up fragments of shrapnel from the landing strip.

This view of the airfield, taken from the control tower, shows a portion of the landing strip, excellent taxiways, and hardstand system—ready to handle traffic to Tokyo.

manner, although some small cuts had to be made. None of those were more than three to four feet in depth, and very little blasting was necessary. They were built off the taxiways and were 100 feet deep and 150 feet wide of waterbonded coral finish with 12-inch sub-base.

A large part of the construction work on this field was done in the midst of the rainy season which, oddly enough, was of material benefit. The rain acted as bonding material for the crushed coral used on the runway, and saved equipment and men for work on the strip which otherwise would have had to be used in long water hauls for sprinkling and bonding purposes. Rain also abated a serious dust hazard harmful to men and equipment due to heavy takeoff and landing traffic in later stages of construction and maintenance.

Drainage problems around the taxiway and hardstands were of little consequence, although culverts had to be placed under some of these. When used, culverts were made of salvaged 10-inch cast iron water main pipe or welded fuel drums. The crown on the runway, 1½ per cent grade, with a 12-inch base of coral allowed water to run off in two directions and find natural drainage.

Buildings Had to Be Constructed

Condition of the strip and taxiway system, as completed by the Battalion, was such that asphalt or other paving material could be used on the entire width of the field without additional sub-base construction.

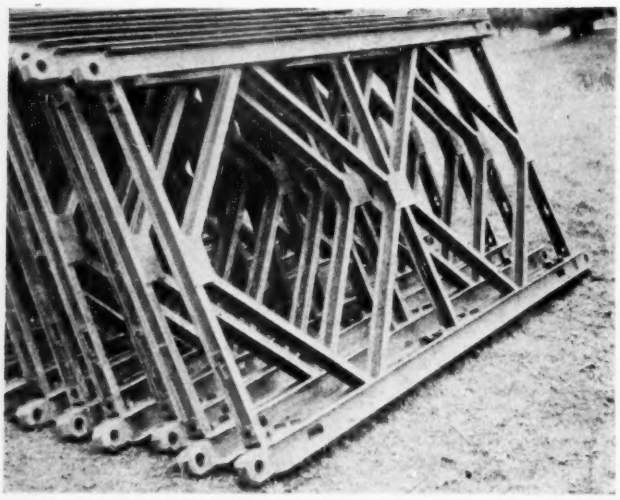
In addition to the work on the air strip and taxiways, the Battalion erected a prefabricated steel control tower set in permanent concrete foundation, and built temporary administration buildings, briefing rooms and operations buildings. Steel huts were dug in for fighter control rooms, and the first Fleet Post Office on the island was built, using tents stretched on wooden frames.

The Battalion also did the ditching and laying of pipe from the field to an aviation gas tank farm. Twenty-five hundred feet of Victaulic pipe and 3,500 feet of four-inch pipe were laid on this project. Pumping stations and a water separating unit also were installed on this line. Work on the tank farm, erecting of steel tanks, and other buildings was done by the Forty-Eighth U. S. Navy "Seabees."

Operations and engineering of the Second Separate Battalion was under the direction of Lieutenant Francis P. McCormick, with work of grading and heavy equipment in charge of Warrant Officer Stephen A. Ogle.

On completion of the assignment, October 25, the Commander of Naval Air Bases inspected the field and in a commendation directed to the Battalion, said in part: "The Commander, Naval Air Bases, Guam, has personally inspected all the work accomplished by the Battalion and desires to commend the Battalion for the splendid manner in which the project was done, and for the splendid spirit of cooperation shown by them."

Captain W. O. Hiltabidle, CEC, USN, officer-in-charge of the Fifth Naval Construction Brigade, and also Island Engineer, in forwarding the commendation, said: "It is considered that the spirit, efficiency and engineering skill shown by the Second Separate Engineer Battalion in the construction and extension of the Orote Air Base has been outstanding and in keeping with the highest traditions of the United States Marine Corps."—END



Prefabricated steel panels, 10 feet long, are the basic units used in the bridge.

The panels are joined with a 2-inch steel pin which takes the strain of the bridge.

Building a "double treble" bridge. Heavier traffic requires the use of added panels.

A pontoon-supported Bailey Bridge over th Alb traffic. A British tank buster moves forward

Marines Now Using

THE Bailey Bridge, a prefabricated sectional structure, has been adopted by the Marine Corps, and a limited quantity for operational and training use has been obtained.

Bailey Bridges have proved successful in major Allied offensives. They are quickly assembled and enable armies to move rapidly across water obstacles and gaps made by enemy demolitions. The bridge was designed by Donald Coleman Bailey, a British civil engineer, and its interchangeable component parts are manufactured both in the United States and Great Britain.

A crew of about 40 men can construct a simple span in a few hours. By adding more girders, more complex bridges can be erected to withstand the weight of the heaviest tanks and armored vehicles. The bridge is easily transportable and can be adapted to any type of gap. It also is extraordinarily immune to aerial bombardment. Even if the

over the Albert Canal in Belgium handles two-way
ves forward to the front as refugees use footpath.

sing the Bailey Bridge

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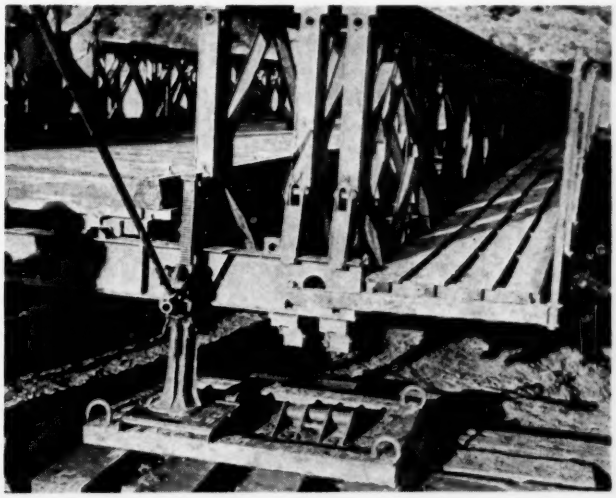
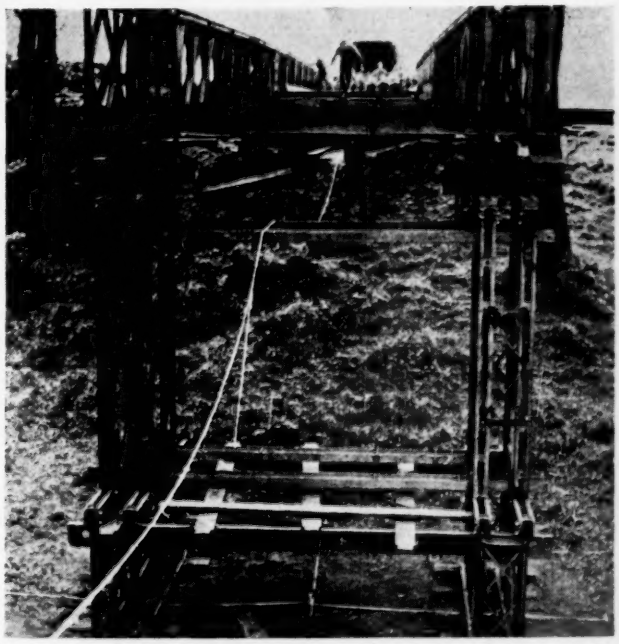
bridge is damaged by a direct hit or a near miss, the interchangeable parts make repair simple.

The bridge consists of two parallel truss sections. These sections are constructed of a series of 10-foot panels supporting transverse members, which are called transoms. On the transoms is built a roadway consisting of stringers and decking. The roadway is 10 feet nine inches wide and is supported by stringers carried on the transoms. The stringers are covered with chess to provide a decking for wheeled traffic. A foot walk two and one-half feet wide can be added on each side of the bridge. The strength of the main trusses may be increased by adding extra panels alongside, by adding an extra story, or by both.

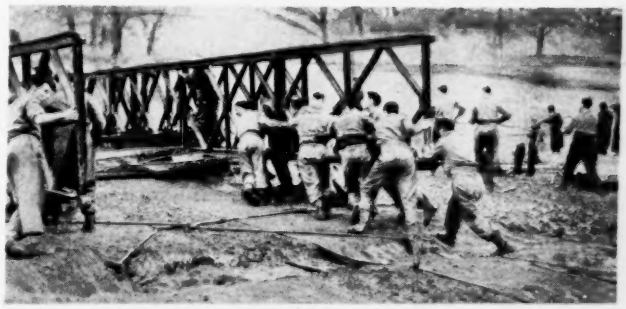
A single unit of bridge will construct 150 feet of double-double or one 80-foot and one 70-foot triple-single bridge or varying combinations of spans. One Bailey Bridge can be transported in 21 2½-ton cargo trucks towing 2-wheel poletype trailers.



Bridge under construction showing jacking. Note footpaths for infantry outside panels.



Pontoons or piers are necessary when the bridge must span a gap more than 240 feet.



A Bailey Bridge is launched by pushing the section on rollers toward opposite shore.

How to Combat Transport Boredom

Time spent on board ships by landing teams can be utilized to accomplish much in last minute planning and rehearsing to increase efficiency. ***By Maj. J. A. Donovan, Jr.***

THE most unusual aspect of the land war in the Pacific as compared with the more normal military operations in the European theatre has been the long distances travelled and the many days spent aboard ships by the troops prior to making an amphibious attack. Some Marine units have spent so many weeks aboard transports in several operations that they are now finding themselves occasionally aboard new construction with Navy crews who for the most part have had less sea duty than their Marine passengers.

This seaborne approach to the target, although routine, is a very important phase of the amphibious operation and one which presents many problems to the outfit on its first long cruise. It is a period during which time much can be accomplished in last minute plans and rehearsals, or valuable hours can be wasted in confusion, inefficiency, and friction resulting in harassed troops that arrive at the target area tired and disgruntled.

Responsibility Should Go to Bn-X

Most of the planning and supervision of troops' routine and administration falls upon the office of the infantry battalion of the landing team to be embarked. In most combat loading, sections from higher headquarters are embarked with a battalion landing team, but it is usually the infantry battalion commander who is designated Commanding Officer of Troops, so his is the responsibility of loading, administration, and unloading. He "holds the bag" as far as the ship's captain is concerned. The battalion commander is a very busy man at this time; he and his Bn-3 have had to work up boat assignment tables, rehearsal plans, operation orders, and constantly keep abreast of the latest situation at the target. He shouldn't have to worry any more than necessary over the care and upkeep of more than a thousand Marines crowded aboard. If he's smart he'll turn the whole task over to his executive officer and then devote all his attention to his Bn-3, company commanders, and his maps. It's an administration job anyway and should be the responsibility of the Bn-X.

In making plans for the supervision of this phase of the operation the executive officer should keep in mind that in any combined operation liaison is all-important. In this case it's with the officers and men of the transport's crew. Anything that can be done to increase understanding and harmony between the Navy and the passengers will result in, if not a happy cruise, considering the nature of the business, at least a pleasant one.

The ship's regulations and characteristics should be in the hands of the landing team a week or two before embarking. The landing team unit commanders should take notes on pertinent ship's regulations and school their men on them, on Navy customs, and on ship's nomenclature. The loading and billeting plans are based upon the ship's characteristics.

Plenty of Jobs for Marine Officers

A list of the various troop officer duties should be drawn up. There are plenty of jobs possible that will help keep the Marine officers occupied contributing to the organization of the life aboard ship, and by dispersing the duties no one is overworked. Officers of the infantry battalion and attached battery will be assigned most of the duties, as the chain of command is usually smoother. The various staff sections aboard are busy anyway.

EXECUTIVE OFFICER OF TROOPS: Supervises the daily routine of the Marines, the administration and care of troop passengers for CO of Troops. Keeps CO of Troops and ship's executive officer informed of any problems. Inspects troop compartments and heads daily.

BATTALION LOADING OFFICER: Assists TQM in making loading plans. Keeps CO of LT informed of developments and progress of loading. Draws up troop billeting plan and supervises billeting. Inspects compartments before troops come aboard and reports any damage of ship's gear to the ship's First Lieutenant. Inspects cargo holds daily while underway. Assists TQM supervise unloading at the target.

TROOP DEBARKATION OFFICER: Works with ship Debarkation Officer on the bridge during drills, rehearsals, and landing, calling up waves and boat teams. Informs LT CO of tardy or inefficient boat teams. This officer can also be the Loading Officer. He should be very capable and level headed.

TROOP COMPARTMENT COMMANDER: Supervises all units in his compartment, their care and discipline. Sets up chain of command for dissemination of "the word" on emergency drills, meals, regulations, water hours, ship's store, etc. Has his compartment and heads cleaned and ready for inspection at 1000 daily. Sees that no one damages or meddles with ship's gear in his compartment.

TROOP OFFICER OF THE GUARD: Runs regular Marine Guard as called for in ship's regulations. Forms and inspects Guard. Reports to and is relieved by Executive Officer of Troops. Checks

"Post order boards" and "Ship's Guard" brassards.

TROOP MESS OFFICER: Makes all arrangements with the ship for feeding troops and for supplying Marine cooks and messmen to the troop mess. Organizes meal hours and formations and inspects mess daily. Sees that Navy table ware isn't misappropriated by the passengers.

TROOP ADJUTANT: Billets all officer passengers according to rank except where certain staff officers are put together to facilitate their work. Sets up a troop office and supervises administration of all troops aboard.

TROOP GUNNERY OFFICER: Usually a captain or major who with the ship's gunnery officer establishes Marine gun crews on ship's guns and sets up any Marine weapons with crews that the ship desires to augment its own armament.

PRESIDENT OF TROOP J.O. MESS: Usually a junior captain who takes his meals in the troop junior officer mess. He sees that the officers are served properly, and that officers mess standards of conduct are kept up.

TROOP RECREATION AND MORALE OFFICER: Works with ship's and troops' chaplains in all recreational and entertainment activities. Gets out information to the troops concerning ship's library, ship's service store, entertainment plans, liberty parties, and ship's movies. Prior to embarkation, arranges to supplement ship's supply of candy, smokes, and toilet gear to take care of troops' needs.

TROOP SURGEONS: Arrange with ship's surgeons for use of ship's sick bay facilities. Hold daily sick call. Set up provisional battle aid stations. Inspect compartments and heads daily with troop executive officer. Inspect troop mess and galley.

TROOP COMMUNICATIONS OFFICER: Establishes any needed communication net to aid in loading operations. Installs phones in troop offices and planning rooms as required. Contacts ship's communication officer and offers any CP personnel available to stand signal watches with ship's crew.

TROOP POLICE OFFICER: Supervises general police requirements of compartments, heads, and decks used by troops. Arranges for work details with troop adjutant. Inspects troop areas daily with troop executive officer.

TROOP POLICE SERGEANT: Assists police officer. Arranges for drawing cleaning supplies, and coordinates area responsibilities of compartment cleaners and head details. Accompanies troop executive officer on daily inspection and takes notes on deficiencies found.

TROOP LAUNDRY OFFICER: Makes necessary arrangements with ship's laundry to handle troops' needs, and posts laundry schedule in troop compartments.

ASSISTANT WATCH OFFICER: Any unemployed junior officers can be designated to assist the Navy officers on the antiaircraft watch.

One way of handling the cleaning and inspection of the troop compartments and heads is to have all troops go topside at about 0800 with their weapons, combat packs, helmets, and gas masks, leaving the rest of their gear squared away on their bunks. Keep them there until after the compartments are inspected. During this period weapons can be cleaned and inspected and platoon leaders will have opportunity to check all of their men's combat gear.

As soon as possible when underway a deck or mess compartment area should be set aside for unit schools. Large sketch maps or terrain maps of the target area should be painted on the deck or mounted on a bulkhead to be used for briefing the sailors and Marines.

The Marines should make every effort to include the Navy in their schools and staff conferences and the officers should be encouraged to eat and work together so that upon reaching the objective all hands are in step and understand each other's problems.

The long periods spent aboard transports should not be considered time for a vacation. The outfit that organizes and uses this time and keeps its officers working for the troops' welfare and cooperating with the Navy, will arrive at the target in a maximum state of readiness, and it will leave the transport and its crew with a feeling of added respect for Marine efficiency.

Rhine Crossing 2,000 Years Ago

In 55 B.C., just 2,000 years ago, Julius Caesar "threw across the Rhine" a pile trestle bridge near Coblenz. Caesar's crossing was only a few miles south of the Ludendorff Bridge at Remagen, across which Brigadier General W. M. Hoge hustled his troops and equipment in March. The spot at which the crossing was made, incidentally, was headquarters for the American Army of Occupation after World War I.

There now are thousands of Americans in that vicinity who probably experienced high school difficulty with Book 4, Chapter 17 of Caesar's Commentaries, where the crossing is described. It took Caesar 10 days to build his bridge.—RALPH Z. KIRKPATRICK.

Using the Tank Platoon in Indirect Fire

An account of a theoretical battle which demonstrates how Army tank battalions have successfully been engaged in infantry support. *By Maj. John T. Monzani, F.A.*

THE —— Tank Battalion, U. S. Army, was to attack with the two medium companies, A and B in assault, the light company, D, echeloned to cover the right flank. There was sufficient time for a thorough preparation and reconnaissance prior to jumping off, although information of the enemy was still incomplete in many respects, particularly as to the exact location of his antitank positions. The tank battalion commander therefore ordered the reserve company, C, to occupy indirect firing positions, by platoon, to support the attacking companies. These positions were to be behind a low hill mask near the attack position. This action would enable him to use all his firepower without having to commit all his tanks initially.

This order ran, in part, somewhat in this fashion: "Company C will occupy position by platoon as indicated. Be prepared to support the attacking companies by indirect fire, initially, using your platoon as individual batteries. 1st platoon, C Company fires in support of A Company, 2d platoon supports B Company, 3rd platoon supports D Company. Do not attempt a central fire direction center but be sure that the platoon leaders are kept informed at all times, of the minimum range they can fire. The S-2 will assist in this. The initial minimum line to fire is along that creek line (pointing). Reduced charge ammunition will be delivered to your platoon positions so that the problem offered by the flat trajectory of the tank gun can be overcome. There would be trouble shooting close-in in front of the hill-mask with supercharge ammunition. Use only reduced charge ammunition and keep it stored outside of the tanks, as C Company tanks will move out of the indirect fire positions, combat loaded. No reduced charge HE is to be taken into the direct assault by mistake.

"The observers will be the platoon leaders of the attacking companies. A fire mission channel will be set on all radios for use in calling on the C Company platoons for fire. The alternate fire mission channel will be C Company command channel. All requests by the observers for fire will come on either of those channels.

Order Covered Essential Points

"When you reconnoiter, remember that as soon as the situation clarifies, C Company will move out of the indirect fire position and be committed as the reserve. The indirect fire positions are centrally located to facilitate support of either A or B in the direct assault."

The order continued not exactly in Field Manual form, but the essential points were covered as re-

M-10s with the Fifth Army in Italy are dug into fixed positions for battery fire.

gards time to occupy position, commitment of the reserve, rallying points, and so on. Obviously this unit was not thoroughly schooled for many of the items covered in the part of the order quoted should have been SOP or require little explanation.

Company Prepares to Move Forward

On completion of the order, C Company commander and his headquarters reserve tank commander, his platoon leaders with two men from their platoons (one carrying the platoon aiming circle and one to act as a guide in bringing the platoon forward) left to go on reconnaissance. The company commander had ordered the company maintenance officer to bring the whole company forward to a release point when ordered. From this release point, the platoon sergeants were to take their platoons, led by the platoon guide, to his platoon positions. The headquarters tank commander would be shown the release point while on the reconnaissance and was instructed to inform the maintenance officer of its location.

The platoon leaders found platoon positions that they thought satisfactory. Each platoon leader looked at the possible positions, first checking on the minimum range that he could fire from it. This was checked with an aiming circle, setting it up, leveling it and measuring the angle of site to the hill-mask over which the platoon would have to fire. The platoon leader then added to this angle of site, the elevation for the range to the hill; he then added two "C's" at the range of the hill. This gave him, within a mil, the minimum elevation that his tanks would report when they occupied position. He then measured from his map the range from his platoon position to the creek, given in the battalion commander's order, as the minimum range to fire. The elevation required to hit the creek line, plus the angle of site to the creek was greater than the minimum elevation. He thus knew that he could accomplish his mission from that position.

Field of Fire Possibilities Studied

The platoon leader next investigated the field of fire possibilities to ascertain that he could shift his fire to the right and left to cover the zone of action of his battalion without increasing his minimum elevation. With the exception of a large tree to his front, the hill-mask in front of his position did not change the minimum elevation to any extent. As for the large tree, any tank firing in its direction would be called "out" and cease firing until the direction of fire was changed.

Following this, the platoon leader decided where each tank would be placed. He looked at the ground carefully to insure that the tanks would be level in their position. A tank which was canted, he realized, would not provide the true deflection changes and elevations ordered since the gun would not be moving in a true horizontal and vertical plane. There being no cross-leveling devices in a tank to overcome the effect of cant, the tank itself must be within 40 mils of being level. The guide whom he had brought with him was shown these tank positions and instructed as to the route to be used in bringing the tanks into position. The guide then left for the platoon's bivouac area to inform the platoon sergeant, under whom the platoon had been left, of the route from the company release point and the positions to be occupied by the tanks. Each tank commander was likewise informed so that no traffic jam would occur in occupying position. The guide also gave the platoon leader's orders concerning the rate of march from the release point, for a large dust cloud raised by the exhaust or the tracks would give away the whole movement.

This is not a narrative of an actual battle. It is merely an outline of the manner in which it may be done. Army tank battalions have successfully used indirect fire on these lines. One fact must be kept in mind, however. Tanks should never be used as artillery when they can be used in their primary role of direct fire. In short, many weapons can be used as artillery, but no other weapon can be used as a tank.

Next the aiming circle was set up in a central position and laid on a compass in the center of the sector. The platoon commander had measured, from his map, the Y-azimuth from his position to the right and left limits of his battalion's zone of action. He then took the Y-azimuth for the center of the sector (assume it to be compass 2000). This Y-azimuth was subtracted from the declination constant of his aiming circle, adding or subtracting 6400 if necessary. Using the upper motion, he set the remaining figure on the aiming circle. With the lower motion, he then centered the magnetic needle. Now he merely had to wait for the tanks to occupy position. When they did, he would sight on the co-axial telescope of each tank, using the upper motion and reading the deflection on the lower scale and micrometer of the aiming circle. Each tank had an azimuth indicator dial graduated counter clockwise in two semi-circles, 0-3200 mils each. The tank gunners would therefore traverse around, sight on the vertical shaft of the aiming circle and set the azimuth indicator hands at zero. They would then traverse to the deflection read and announced by the platoon commander as he sighted on their particular tank. After the gunners traversed to their announced deflection they would set the hands of the indicator at zero again. All tanks would then be laid parallel on compass 2000.

A definite effort had been made, in selecting the individual tank positions, to avoid anything resembling a line. The actual locations of the tanks resembled the letter X, when seen from above, with one tank in the center and one tank at each ex-

Tank destroyers deliver flanking fire for their Fifth Army positions near Bologna.

tremity of the letter. Thus, no matter which way the fire was shifted, if the center tank was used to adjust, the same fire pattern would result on the ground.

The Company Commander, having reconnoitered and located his Company CP centrally, decided on his local defense measures, sent back his headquarters reserve tank commander to lead his headquarters tanks and section from the release point. The platoon leaders, with the company commander, then left to reconnoiter the routes that they might take when the reserve company was committed to the attack.

Some hours later, the company was brought to the release point and the platoons were released to proceed to their individual positions. They moved into their positions smoothly. After carefully boresighting, they were laid parallel by the platoon commander, in the manner outlined previously, on compass 2000. Minimum elevation was then determined for the sector in which they would fire. The ammunition was sorted and stored by lot in shaded, protected positions and ammunition pits were started by the tank drivers.

The platoon leaders then began to organize the local defense. Each tank commander was given a definite sector, delimited by obvious terrain features, to watch. Ranges to the critical points in the sector were determined. Camouflage was improved.

All tank radios, except the platoon leader's radio, had been turned off to insure full voice control by the platoon leader. His tank was at the center of the X formation and all fire requests were acted upon and controlled by him alone. From his tank, a handset with a long extension cord led out to where his radio telephone operator stood. Beside the radio telephone operator stood the recorder whose only duty was to record all fire commands and to determine mathematically the deflection reading that should be on the azimuth indicator of each tank. The recorder was the platoon leader's check that the fire commands had been executed properly by the tanks. The azimuth indicator hands were never reset at zero once the tanks were laid parallel initially except when base deflection was recorded. Thus the recorder added the left deflection shifts or subtracted the right deflection shifts from the previous deflection readings shown on his sheet. When the platoon leader wished to determine if one of the tanks, or all of them, were executing the commands properly, he would call out "Deflection, Number One?" When the tank commander replied with the deflection reading on his azimuth indicator,

the platoon leader could check it against the deflection reading shown on the recorder's sheet. The recorder could by this method give the platoon leader, at any time, the correct deflection for any tank.

Beside the recorder was the platoon sergeant, who was acting as a computer to change the observer's sensing into fire commands. As an example of his duty: while adjusting on a target, the last round was fired at Elevation 70, with a "c" of 4 mils. The observer sensed the last round as 200 Right 200 Short (the error in yards from the target). Elevation 70 was the elevation for 2000 yards. Using the mil formula, W/Rx$\frac{1}{m}$, the deflection shift would be W(200)/R(2) = 100$\frac{1}{m}$ or Left 100. Adding two "c"s (a "c" is the change in elevation to move the burst 100 yards in range) to Elevation 70, the next elevation would be Elevation 78. These commands were given to the platoon leader, by the computer, who announced them to the platoon. (The Graphical Firing Table which was normally used for converting these sensings had been lost.)

Controlling Fire of the Platoon

The fourth one of the group around the command tank was the platoon leader, who controlled the fire of the entire platoon. Since none of the targets at which the platoon was firing could be seen, this being indirect fire, such control was necessary in order to perform any shooting.

A Code Compass (Compass 1500) and a Code Range (Range 2000 yards) had been given the observers and the platoon leaders. The approximate location of the platoon indirect firing positions had been indicated to the observers on their maps. The positions could not be marked on the maps due to the possibility of the maps being captured.

The first request for fire came as follows—"Fire Mission, Forward Observer Able, Code Compass plus 400, Code Range plus 500, two antitank guns dug in, Will Adjust." Since this request was from "A" Company, the first platoon of "C" Company, in accordance with the battalion commander's order, took the fire mission.

The platoon, having been laid on Compass 2000 initially, to shift it to Compass 1900 (Code Compass 1500 plus 400) a command of Left 100 was given the platoon. (Compass decreases when the shift is left.) The elevation for a range of 2500 (Code Range 2000 plus 500) was given the platoon and the deflections of the tanks were checked against the recorder's sheet. The rounds were then fired.

The shoot continued until the mission was completed. "A" Company had been able to remove the two antitank guns from its path without losing a tank or having to expose its tanks to the fire of the antitank guns in order to knock them out. The reserve, defiladed and protected firepower of the 1st platoon "C" Company had done the job for them. Thus "A" Company was left intact to pursue its primary task of reaching the rear areas, disrupting enemy communications, command and supply installations.

The battle continued. The tanks in assault moved slowly and cautiously across the terrain. The platoon leaders of the attacking platoons searched thoroughly the area to be moved over. Sometimes they fired at dangerous targets, using their supporting indirect fire platoon, before they crossed the area. Sometimes they fired at suspected areas. At any moment, however, they had available to them the fire of their own platoon plus the fire of the indirect fire platoon. This mass of fire materially aided the advance, for they were able to smother the targets with fire.

A final note concerning this type of tank employment—Supercharge High Explosive can be used but reduced or normal charge ammunition is better.

Army Use of the Flamethrower

1. The flamethrower's principal use is in attack of fortified positions by assault detachments, and the weapon must not be used without support of other weapons. The operator should not be encumbered with arms, but the assistants should be armed with weapons such as grenades and carbines.

2. As it is absolutely essential that the operator and his assistant know exactly where the fortified position is located, the operator must be taken on the actual reconnaissance of the objective.

3. At the approach, the weapon must be tested for leaks, proper gas combustion, and readiness to fire before entering the range of small arms fire. Because of the silhouette of the flamethrower, it may be necessary for the operator and his assistant to drag it along the ground and if natural cover is not available, a smoke screen from WP grenades or other small smoke munitions should be given.

4. In reduction of an emplacement, at least two flamethrowers must work together in the attack on a bunker. If flank and frontal fire are not sufficient to reduce the emplacement, the demolition party may approach from the flank, under cover of frontal fire from the flamethrower, and place demolitions.

5. To avoid crossfire from mutually supporting emplacements in the open, detailed reconnaissance, careful planning, exact timing and the effective use of smoke in the approach with flamethrowers is necessary.——Army War College, Dec. 20, 1944.

Booby Traps in Small Business

The homecoming veteran who desires to go into business for himself will stand a better chance if he employs some of the tactics he learned in service. *By Captain Albert C. Murphy*

A RECENT news item indicated that many millions of servicemen hope to go into business for themselves after separation from the military service. This wish of men to "be one's own boss" is not new, but it is accentuated now in the minds of men who have had a few years of military regimentation which, while necessary, is irksome to most Americans.

Thoughts of transition from military to civilian life include the disturbing factor that one set of superiors will merely be exchanged for another. Many ex-servicemen will attempt a solution to this problem by going into business for themselves. This is all right, but they should watch out for the Booby Traps!

Warnings about some of the hazards in small business are not meant to frighten anyone away from establishing a small business of his own. A military handbook on the hazards of booby traps is not distributed for the purpose of frightening troops away from an objective, but is intended to tell them how to cope with these obstacles when entering new territory.

A business of their own will indeed be new territory for many servicemen. They should plan well and take good counsel before committing their fortunes and their futures to the operation, so that when they hit the beach of competitive business they won't be fouled up. And planning does not mean pipe dreaming. No one should think that, because he has let his service pay "ride," he can pool it with his cashed-in war bond money, mustering out pay, and a government insured loan and invest it in a little business that will make a teapot full of money while the owner "sleeps in." Sack time will be very brief during the assault phase of a new business.

The counterparts of military life will be much in evidence. The new businessman will be up against a large, strong force of competitors, well dug in, well armed, well trained, and, most important of all, "well heeled." He will have to be a one-man general staff to manage all the problems of personnel, operations, intelligence, supply, logistics, and the paramount problem of finance.

Independence a Difficult Goal

Men have mastered this situation before and will do so again if they realize that, although their objective of independence is a difficult one to attain, it certainly is worth the sweat, toil, and tears that will be expended before it is secured.

"How small is small business?" is almost as vague a question as is "How high is up?" Nevertheless, it can be said that in the United States small business is really big business if measured by the numbers of persons employed. The numerical majority of employed people in the United States work in establishments that employ from one to 20 persons, and they constitute a large and important sector of our national economy. These establishments include such "home industries" as rabbit raising in the back yard, growing mushrooms in the cellar, hair dressing in the parlor, radio repairing in the attic. From such humble beginnings many a U. S. fortune has been made.

Most Retail Business Ventures Fail

The greatest number of small businesses are in the retail classification, owing chiefly to the ease with which that type of enterprise may be launched. However, the retail business mortality rate is the highest of all. Over one half of all new businesses fail in one year; 95 per cent fail in five years or less.

The veteran should call on his common sense and his military training when he faces the prospect of starting a small business. In military life, he would not commit the lives of troops in his charge to taking an objective before making a reconnaissance and getting as much information about the enemy as possible. The military man would consider the amount of equipment and the personnel required, the quantity of supplies of all kinds that would be needed, and he would have emergency rations to tide him over lean periods. The same tactics should be employed before an attempt is made to establish a business.

To enter business, reconnaissance could begin by reading expert opinions on the various phases of small business and on the particular type of business contemplated. Most public libraries have numbers of good books on these subjects. The government publishes many excellent books and reports that may be obtained free or for a very small fee. Every prospective small businessman should obtain a copy of the "Senate Committee Print No. 4 Small Business Bibliograph." This booklet has been printed for the use of the Special Committee to Study Problems of American Small Business and may be obtained free of charge by writing to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. It contains the titles of hundreds of publications and news items concerned with the problems of small business.

One of the most informative books listed in the

Bibliography is Monograph No. 17 of the Temporary National Economic Committee on the Problems of Small Business. This Monograph costs 40 cents and may be obtained from the same source as the bibliography. The Monograph can be the Landing Force Manual for the new businessman. He should study it before making final decisions.

Reconnaissance also should include discussions with the credit manager of the veteran's bank. It is widely believed that banks have no time for small business. This is strictly scuttlebutt and very wrong. There are many "right guys" in banks, too. The veteran contemplating a business of his own should go to his banker and get the word. One of the common failings of small business men is their failure to make full use of valuable services that can be obtained free or for a reasonable fee. A good Chamber of Commerce also is an excellent source of information.

When on reconnaissance for this mission, it also would be wise for the veteran to learn about the tricks of his trade. This can be done best by infiltration, by getting a job in that business and working at it a year or two. A businessman will not show his hand to a competitor any more than a tent mate would show his cards to an opponent in a game of pinochle—and the businessman is playing for keeps.

In supply and logistic efforts as applied to business, "too little and too late" can be paraphrased as "too much and too soon." The businessman has to arrange to have enough, but not too much, stock in trade on hand and at the right time. Excessive inventory results in high costs for carrying charges, and obsolescence and depreciation may take a huge toll. Nice planning is required here. If there is too much stock on hand, it can't be carried. If there is too little, orders cannot be filled.

As his own personnel officer, the veteran will find that he must exercise real wisdom when it comes to hiring people to work for him. The sack rats and yard birds will be in civilian clothing then, and will be delivering snow jobs to prospective employers. As operations officer, the veteran must decide the best location for his outfit. Working hours, efficiency, and morale must be carefully handled. Strikes can occur, and employes can apply for a transfer by the simple expedient of quitting. Employment regulations are important and the employer must familiarize himself thoroughly with laws covering employment, to comply with them.

There are land mines galore in the tax laws, also. If a good tax lawyer or accountant is hired as a mine detector, it will pay off.

In place of psychological warfare, the veteran will advertise. Most newspapers render this service with considerable skill, but the businessman must decide how much money to spend on it and when it is best to use it.

The emergency rations of business are called reserves, and the veteran must see to it that he has enough cash to carry him over the lean periods. This is one of the problems that should be taken up with a banker, who can give shrewd advice.

All the ramifications of small business cannot be encompassed in a short article, and only the highlights have been discussed. The booby traps in small business, tabulated in the order of dangers revealed by past experiences, might be summarized as follows:

1. Lack of adequate capital.
2. Lack of qualifications and capacity of management.
3. Competition.
4. Tax and employe trouble.
5. Letting employes run the business while the boss secures.

These comments need not and should not deter anyone from exercising his prerogative to go into business for himself. It has been done successfully before and ex-Marines, with the courage and determination they have displayed in the Corps, should be victorious also in the battle of the market place. But before they take off, they must get the word and not become casualties from the booby traps that pave Easy Street.

Birth of the AAF's Jet Planes

In a detailed report on the Army Air Forces, General H. H. Arnold, Commanding General, has revealed the interesting background behind the adoption of jet propelled engines for American fighting planes. General Arnold, early in 1941, inspected British developments of the Whittle gas-turbine engine and secured from England production rights as well as the physical rights to the engine. In September, 1941, a conference delegated to the General Electric Company the task of building 15 such engines and to Bell Aircraft the task of building three for twin jet engined airplanes. The contracts were prepared with absolute secrecy.

"Never has a plane been built in this country under greater secrecy," General Arnold stated. "At both General Electric and Bell, the men who worked on the project were investigated even as to their personal habits, so that not even through careless conviviality could mention of the project leak out. The workers were segregated in blacked-out, heavily guarded buildings. Even so, some of the workers were unaware of what they were doing. For instance, the men at Bell who were fabricating the wing sections never saw the fuselage. A year later the first jet plane . . . was put together, ground tested and flown."

The Marine Rifle Squad in Combat—4

Careful preparation is essential to the success of a patrol. In this article, last of a series on the Marine Rifle Squad, operations of a squad as a patrol are described.

A PATROL is a detachment of troops sent out from a larger body on a mission of reconnaissance, security or combat.

The size of a patrol depends upon the mission, the terrain to be covered, the proximity, strength, and attitude of the enemy, and conditions of visibility. The patrol may vary from two men to a company or larger organization. A squad, or part of a squad, such as a fire team, is often sent out as a patrol.

The sergeant (squad leader) or corporal (fire team leader) may often be assigned as patrol leader. To be good patrol leaders, these noncommissioned officers must possess true leadership, courage, initiative, coolness, stamina, and patience. They must be well trained in scouting and patrolling, both day and night. They must know how to use a compass and have confidence in it; they must be proficient in map and aerial photograph reading, in sketching, and in the writing of brief, clear messages and reports. They must know woodcraft and how to live off the land.

The officer ordering the patrol will give the patrol leader explicit orders as to what it is to do. The orders will include all relevant information available, such as: mission, size of patrol, terrain conditions, enemy dispositions, location and activity of friendly troops, missions and routes of other patrols, general routes to be followed, outposts or security elements through which the patrol is to pass, place where messages are to be sent or the patrol is to report, time the patrol is to return, challenge password and reply, special instructions as to reports to be furnished, areas to be avoided, and special equipment necessary for the patrol to carry out its mission. In addition, the orders should tell whether or not the patrol should avoid combat. The patrol leader must be sure he thoroughly understands his orders. If there is any doubt in his mind as to what is expected of the patrol, he should ask questions.

Preliminaries for the Patrol Leader

After receipt of his orders the patrol leader estimates the situation, contacts his men, formulates and issues his orders, holds rehearsals if time permits, makes sure that friendly troops through which the patrol must pass are informed of the patrol's activities, coordinates his plan of action with other patrol leaders operating in the same area, and inspects the patrol before departure.

When a higher commander assigns a squad leader or fire team leader to a patrol mission, the leader should first make an estimate of the situation and decide on his plan of action. The estimate will be based on the information given him by the officer ordering the patrol, his own knowledge of the enemy and of the terrain over which he is going to operate, and a study of maps and aerial photographs. Probable danger areas, such as fords, crossroads, or high points, where enemy observers may be stationed may be picked out from a study of maps and aerial photographs. If a guide has been assigned to accompany the patrol, he should be present during this study to answer any questions the patrol leader may want to ask him.

Considering the Route to be Followed

During this study the patrol leader should select the routes he will follow. Actual terrain reconnaissance should be made when possible. The best route is one that affords maximum concealment and yet presents the minimum of obstacles to the patrol. Woods with little underbrush offer few obstacles, whereas thick underbrush may be impenetrable. The edge of a stream bed or fence line usually offers a concealed route. However, it must be kept in mind that the enemy also considers these features and may have them under observation. Weather conditions should be considered when choosing a route. For instance, has it been raining for the past few days? If it has, then stream beds that are normally dry may be filled with water; swamps, and low ground may be serious obstacles.

The possibility of ambush should be kept in mind when selecting the routes available for a patrol. In his selection of routes, the leader takes into consideration the routes that have recently been used by other patrols. By avoiding these routes, the possibility of ambush will be reduced.

The route selected to be followed during daylight will differ from that to be followed at night. In daylight, in the presence of the enemy, it is mandatory that a route offering maximum concealment be chosen. Usually the route should pass through defiladed areas, woods, swamps, and along difficult slopes and water courses. At night, darkness provides concealment; therefore the route may follow more open terrain. Since the route selected will usually be a circuitous one, the distance to be traveled with relation to the time available is a factor that must be carefully considered. The route of return should be different from that used on the outward trip.

When selecting a route, a patrol leader should also select rallying points in enemy territory. These

points are on or near terrain features which can be easily recognized by the individual members of the patrol. They are points to which the members of the patrol will proceed if individuals become separated and lost or if the patrol is dispersed by enemy action. At these rallying points, the leader reorganizes the patrol prior to continuing on the assigned mission. Several rallying points should be chosen. The leader keeps the members of the patrol informed at all times at which rallying points they are to assemble in case of dispersal of the patrol.

Selecting Members of the Patrol

Having made an estimate of the situation, decided on a course of action, and selected routes and rallying points, the patrol leader contacts the other members of the patrol. At this time, he inspects them for physical fitness. If a man has bad feet, he should be rejected and someone appointed to take his place. If a man has a cold or any other ailment that may cause him to sneeze, cough, or sniffle, he should be rejected. The leader should pay particular attention to the mental fitness and alertness of each individual. The men finally selected should be informed of the mission, what equipment will be needed, and the time and place to assemble for orders. Any piece of equipment not actually needed for the accomplishment of the mission should be left behind. If any special equipment (such as additional or different type weapons, special clothing, machetes, wire cutters, field glasses, compasses, and so on) not normally carried by the members of the patrol will be needed, the patrol leader should direct the second-in-command to obtain and distribute it.

At the designated time and place the members of the patrol meet to listen to the patrol leader's order. The order is based on the plan developed from the estimate of the situation he has just completed. The leader must issue his order to all members of the patrol since the patrol may be forced to scatter and its members have to work alone or in small groups to accomplish the mission. In his order, the patrol leader should include:

(1) Information of the terrain over which the patrol is going to operate, of the enemy and of friendly troops.

(2) Mission of the patrol.

(3) Plan of action to include initial formation, time of departure and return; routes (primary and alternate and the conditions under which the alternate is to be used); action if attacked; rallying points; designation of chain of command; designation of a get-away man; and responsibility for security.

(4) Instructions as to equipment, arms, and camouflage, and disposition of wounded and of enemy prisoners.

(5) Passwords and signals.

(6) Location of patrol leader.

Rehearsals should be conducted prior to any patrol activity if time permits. The purpose of the rehearsals is to familiarize each individual with his conduct while on the mission. Regardless of how much training the individual members of the patrol may have had or how much they have worked together, plans should be rehearsed. Ground similar to that over which the patrol will operate during the mission should be selected for the rehearsals. If the mission is one of reconnaissance, the rehearsals may consist of practicing the formations and the signals to be used, the action of the patrol if ambushed, and the action of each individual when the patrol halts for the purpose of observing. If the mission of the patrol requires the destruction of some installation, the plan should be rehearsed on an exact mock-up of the installation.

The officer ordering the patrol informs all friendly troops through which the patrol will pass, of the patrol's activities. He arranges for the passage of the patrol through friendly lines. The patrol leader ascertains whether or not this has been done and also obtains the passwords to be used. Before leaving friendly lines, the leader should contact the commanders of the units through which the patrol is going to pass, inform them of the proposed routes out, the approximate time of departure and return, and obtain from them the latest information of the enemy and friendly troops in the vicinity.

The officer ordering the patrol coordinates its activities with those of other patrols operating in the same area. If the other patrols are already out, the officer ordering the patrol gives the leader the passwords he will need in case he accidentally collides with them. If the other patrols are leaving about the same time, the patrol leader should contact the other leaders and familiarize himself with their plans. The leaders must, at this time, decide on signals for mutual recognition.

Factors Determining the Formation

A squad may employ a number of formations while on patrol duty. The factors to be considered in choosing a formation include: mission, terrain, conditions of visibility, control, and security. The formation must permit movement in any direction, and quick change to another formation by signal. It must provide for all around protection; front, flanks, rear, and overhead. Each member of the patrol is assigned a sector of observation. When the patrol halts, each individual takes up a fire position from which he can observe the sector assigned him. The security of the patrol depends upon the efficiency with which each individual performs his job in this respect.

A native may be assigned as guide for the patrol. If a guide has been assigned, he should be with the patrol leader while he makes his estimate of the situation, formulates his plans, and issues his orders. A good guide will prove to be an asset. He will know the terrain and be able to move over it more

rapidly and surely than anyone else in the patrol. He may be able to enlist the assistance of other friendly natives by talking with them and assuring them of the friendly intentions of the patrol. Patrols should cultivate the friendship of the natives; it will pay dividends.

Patrols ordinarily communicate with base by radio or messenger. They communicate with air by flares, smoke signals, panels or radio. If the patrol is to be rationed or otherwise supplied by air drop, complete arrangements for positive communication with dropping aircraft by at least two methods must be made prior to departure. The patrol leader should be present when such plans are being discussed.

All members of the patrol should bathe and put on clean clothing, paying particular attention to their shoes and socks. Socks should be free of holes and fit well. Shoes should be examined carefully to make sure there are no nails that might pierce the inner sole and so cause irritation. Two-piece utility uniform or jungle uniform may be worn. The trousers should be tucked into the tops of socks and tied lightly—this will tend to prevent the trousers snagging on vines or brush. Web and other canvas equipment should be kept to a minimum. Any piece of equipment that might reflect light when exposed should be dulled by using dirt or by smoke. Identification tags should be taped with black friction tape; luminous watches should be worn dial in. Faces should be camouflaged either with camouflage paint or dirt. Gloves should be worn to cover the hands and also to protect them from brambles. Weapons can be camouflaged by attaching a few small pieces of natural foliage to the weapon with rubber bands or slender vines.

Each member of a patrol carries his own rations. The amount of food carried will depend upon the number of days the patrol will be out. If there is edible food in the area in which the patrol is going to operate, this fact should be taken into consideration when deciding how much food to carry. The amount should be based on two meals a day. Heat tabs and atabrine (if operating in malarial areas) should be carried by each man.

Rations and Water

Each member of the patrol carries his own water. Canteens should be filled and inserted in socks or wrapped up in cloths to prevent them from rattling when placed in the cups. If the wrappers are wet down, it will help to keep the water in the canteens from warming. Each member will carry two canteens. Water purification tablets should be carried by each man and will be used every time canteens are refilled. During hot weather, salt tablets should be carried and used to prevent heat prostration.

Some time before departure, the leader should assemble his patrol completely equipped and inspect each individual. This inspection is made to insure that all equipment is present and in good condition. At this time, the leader checks the equipment to see that it does not rattle. All equipment which tends to rattle must be muffled in some manner. Each member is checked to see that he does not have on his person any article that would tend to give away the identification of the unit to which the patrol belongs, or the location, strength, or state of morale of any friendly troops. All members should be reminded that in case of capture they are obliged to give only their *name, rank,* and *serial number.* Under no circumstances will they give any other information to the enemy.

Reconnaissance Patrols

The mission of a reconnaissance patrol is to *obtain* information of military importance and to *transmit* that information to the commander desiring it *in time for it to be of value.* This type of patrol does not engage in a fire fight with the enemy unless it is necessary to do so to carry out its mission. Reconnaissance patrols are small so they can move rapidly and silently. The fire team or squad are suitable units for reconnaissance work. A two, three, or four man patrol is most effective.

Small reconnaissance patrols may be called upon to execute one of a variety of missions. The following are suggestive but not all-inclusive:

(1) To locate and determine the nature of enemy installations.

(2) To observe and report enemy troop movements.

(3) To reconnoiter hostile defensive wire and obstacles.

(4) To investigate gassed areas (Extent and type of agent).

(5) To reconnoiter a route.

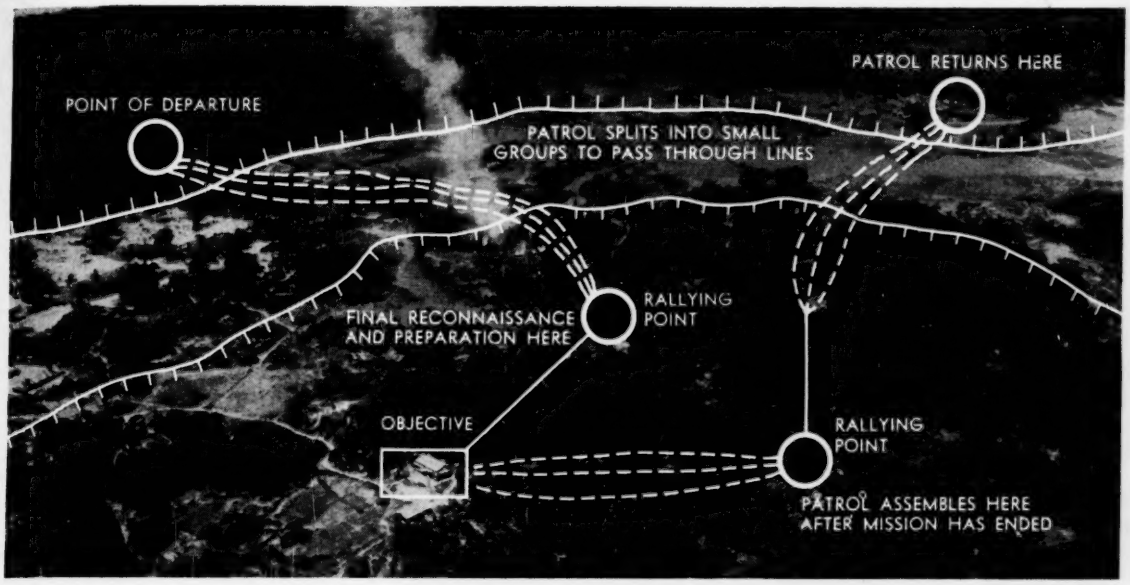
(6) To reconnoiter a road.

(7) To reconnoiter a beach and the approaches thereto.

(8) To reconnoiter bridges and stream crossings.

A number of items of equipment normally carried by a marine may be left behind while he is a member of a reconnaissance patrol, and only essential equipment should be taken. Each member of a reconnaissance patrol should carry a compass and know how to use it. If cutting is anticipated, each member should carry a machete. Each member should have a wristwatch; a fork or spoon will suffice for mess gear. At least two members of the patrol should carry a map or photomap of the area the patrol is going to cover. Overlay paper, message book, pencils, and flashlights should also be carried. Soft caps should be worn in lieu of the steel helmet. If the patrol is going to stay out for more than twenty-four hours, a change of socks should be carried.

This article is based on information in Manual NAVMC-3729, recently issued by Marine Corps Schools at Quantico, and is presented in this form as a GAZETTE feature.


PATROL RETURNS HERE
POINT OF DEPARTURE
PATROL SPLITS INTO SMALL GROUPS TO PASS THROUGH LINES
RALLYING POINT
FINAL RECONNAISSANCE AND PREPARATION HERE
OBJECTIVE
RALLYING POINT
PATROL ASSEMBLES HERE AFTER MISSION HAS ENDED

The manner in which an infiltration patrol conducts itself is shown above. Note the two rallying points. One is used prior to launching the attack, the other afterward.

Since a reconnaissance patrol does not as a rule enter into a fire fight, it need carry weapons for self defense only. The carbine or a .45 caliber pistol are suitable weapons for this purpose. A minimum of ammunition should be carried. In addition to the weapons mentioned above, either a bayonet or hunting knife may come in handy for doing away silently with sentinels.

The patrol may leave friendly lines as a unit or split up in pairs which leave from different points at different times. The latter method may be desirable when enemy lines are in close proximity to friendly lines. In this case, the initial rallying point would be established about 300 or 400 yards in rear of the enemy front lines. Each group would leave friendly lines at a specified time and follow different routes to the rallying point. After reorganizing at the rallying point, the patrol would continue on its mission.

After leaving friendly lines the patrol avoids usual routes of travel whenever possible. When a trail must be used, all intersections with other trails should be avoided. Before crossing a trail, the patrol should make a visual reconnaissance up and down it. Footprints made crossing a trail should be obliterated. The patrol takes advantage of all terrain features along the route. It moves by bounds from one terrain feature to the next, utilizing to the fullest extent the cover and concealment offered by the ground. It moves as quietly as possible. At each terrain feature, the patrol halts under cover while the patrol leader visually searches out the ground next to be crossed. During these halts, the leader should orient the patrol and designate the rallying point to be used if the patrol is surprised during the next bound. At night, the patrol uses open ground if available but avoids the sky line.

Upon encountering obstacles such as wire or mine fields, the patrol protects the leader while he makes a reconnaissance. Gaps already made in the wire or mine fields should be avoided because they may be covered by fire. New lanes should be cut, or points where individuals can crawl through should be selected for passage of these obstacles. The leader must always be on the alert for noise-makers or booby traps attached to wire or planted in mine fields and remove or disarm them before attempting a passage.

The return route may depend upon the actions of the enemy and the nature of the terrain. The return must be as cautious as the outward trip. During the return trip, the vicinity of known or suspected enemy positions should be avoided unless the mission required that they be reconnoitered.

After returning to friendly lines, the patrol leader must report *immediately* to the officer who ordered the patrol. He will submit a brief, concise report, with sketches, to set forth all the information he gained while on the mission assigned.

Combat Patrols

Combat patrols are assigned missions which will probably require them to engage actively in combat.

Combat patrols may be called upon to execute one of a variety of missions. The following is a partial list of such missions:

(1) To infiltrate through enemy lines to destroy an installation such as a power plant, a radio station, a command post, an ammunition or supply dump, a factory, a tank or vehicle park, a bridge or dam, and so on.

(2) To seize and hold some key terrain feature or important installation pending the arrival of friendly troops.

(3) To mop up isolated groups of enemy resistance bypassed by the attacking echelon.

(4) To protect the flanks or rear of a marching column.

(5) To prevent hostile reconnaissance units from discovering the dispositions of friendly troops.

(6) To keep hostile infiltration groups from executing harassing or destructive missions.

(7) To destroy any hostile patrol which may have gained information.

(8) To deny any commanding ground which will permit observation of, or delivery of effective small arms fire, against friendly troops.

(9) To capture prisoners.

Equipment for a Combat Patrol

The size of a combat patrol may vary from two men or a fire team to a platoon, a company, or a larger unit. Regular combat equipment is worn. The nature of the mission will determine the type and amount of any special equipment that will be taken. If, for example, the mission is one which requires the destruction of some installation, such as a bridge, a dam, a radio station, or a power plant, demolitions will have to be carried. A combat patrol will often carry extra automatic weapons, such as ARs or submachineguns. A maximum amount of ammunition, consistent with other necessary equipment, will be carried.

A patrol assigned a mission requiring it to infiltrate through the enemy's lines conducts itself in a manner similar to that described for a reconnaissance patrol. It moves rapidly and silently along a previously chosen route to the objective. Rallying points are selected along the route. Two rallying points should be selected in the vicinity of the objective. One of them is used by the patrol to make final preparations prior to launching its attack. At this time the leader makes a reconnaissance and makes any last minute changes necessary in the prearranged rehearsed plans. The other rallying point is the place to which the patrol proceeds on signal after the mission has been accomplished. Here the patrol reorganizes prior to returning to friendly lines or striking out on another mission.

This type of patrol should be divided into three groups. One group, the killer group, is assigned the mission of doing away silently with enemy sentries. The second group, the cut-off group, is composed of automatic weapons which will be so located as to cut off enemy escape, full advantage being taken of natural fire lanes around the objective. The third group, the assault group, is the assault unit and will be assigned the primary mission of destroying the objective. Final preparations having been made, the killer group moves in stealthily to do away with sentries. Having done away with the sentries, the members of this group post themselves to cover likely avenues of approach for enemy reinforcements. The cut-off group takes up stations on signal from the patrol leader. After the cut-off group is posted, the assault unit, led by the patrol leader, moves toward the objective silently and rapidly. It should move in silently, as long as it is not discovered, in order to gain the maximum degree of surprise.

Once the objective is taken, the area should be searched rapidly but thoroughly in order to collect any maps, photographs, copies of orders, and so on, that may be on the premises. On signal the members of the three groups leave the area and move rapidly by previously selected routes to the next rallying point, where the patrol reorganizes to proceed on its next mission or to return to friendly lines. If there are casualties, they should be taken to the rallying point where first aid will be administered. If the patrol is to proceed on another mission, casualties will be returned to friendly lines.

A patrol assigned a mop-up mission operates against isolated enemy groups in the rear of our front lines. The mission of such a patrol is the destruction of elements bypassed by the attacking echelon. When such elements are located, they should be fixed by fire, enveloped rapidly to prevent escape, and assaulted and overcome with the bayonet, grenade or other means of close combat. Such groups will often be found in dense woods, villages, and caves. In operating against these groups, the patrol must adopt formations that will provide for all around security.

Thorough Reconnaissance Essential

A patrol operating against isolated pockets in woods must be very thorough in its reconnaissance. The patrol should search in pairs which maintain contact with each other. One member of each pair searches a strip thoroughly while covered by the other member. The success of the mop-up operations depends largely upon the rapidity with which the patrol strikes enemy positions once they have been located.

To operate against isolated resistance in villages, a patrol should be divided into three groups: a support group, a cut-off group, and a searching group. The support group is placed in position to support by fire the searching group while it works in the village. The cut-off group should be maneuvered to a position from which it can prevent any reinforcements from entering the area to be searched and to wipe out any enemy who try to escape. After the support group and cut-off group have taken their positions, the searching group should enter the village by a concealed route. The searching group should be well equipped with grenades and submachineguns. It is normally divided into two parties which move by bounds through the houses on opposite sides of the same street. One party covered by the other searches the nearest house. The

house should be approached from a blind side, and, when possible, searched from top down, room by room. Each room should be grenaded before it is entered. During the search, all precautions must be taken against booby traps that are usually placed in doorways or windows but which may be attached to furniture, pictures, clocks, and so on. Having completed its search of the first house, this party should take up positions from which it can cover the houses on the other side of the street, paying particular attention to the first one, which will be searched by the second party. The second party is then signaled. It proceeds to search the first house on the other side of the street. As soon as its search is complete, it takes up positions in or adjacent to that house to cover the advance of the first party while it approaches and searches the next house on its side of the street. This procedure is continued until the village has been thoroughly searched.

When operating against hostile groups that have taken refuge in caves, a patrol may be divided into two groups—a support group and an assault group. After the resistance is discovered, the support group should take up firing positions and deliver aimed fire at the entrance to the cave, thereby fixing the enemy in the cave. The assault group, armed with demolitions, and fragmentation, incendiary, or smoke grenades, should work itself into a position from which it can throw the demolition charge or grenades into the mouth of the cave. Rocket launchers should be attached to the support group; flamethrowers, to the assault group. The latter weapon is particularly effective.

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The Responsibility of the Regular Officer

By imparting his experience and his enthusiasm to newly commissioned officers, the regular officer can perform a great service for the Corps. ***By Colonel E. E. Larson***

THE Marine Corps now has 6,340 regular and retired officers, and 27,446 reserve officers on active duty. This means that the newly commissioned officers are in the vast majority and are increasingly important in the overall picture and development of the Marine Corps. Many factors have contributed to the success of the Marine Corps during the past years of unparalleled growth, but none has been more important than the role played by this host of new officers. They have entered the Corps with the highest of patriotic motives, to do their part in the struggle in which we are presently engaged. By far the largest number are young men of junior rank. All are junior in service experience, in the knowledge of the military approach, and in Marine and Naval background. Time and experience are required for anyone to become familiar with all the ins and outs of naval customs and traditions, and the past few years have offered but a bare minimum of time for such indoctrination. Despite this, these newly commissioned officers, from every walk of life, have done an outstanding job. They have definitely made the team.

As the officer strength of the Corps now approaches its peak, it is well for all regular Marine Corps officers now on active service to make a personal checkup to see if they have left anything undone in helping their new teammates. Has each one of us given unstintingly of his time to help train and show the way by example and instruction to those who are new in the Service? If the answer is in the negative, it is time to take positive action.

The tempo of the war and the ever growing work load has made it extremely difficult and, in many instances, practically impossible to do as much along those lines as would have been done under ordinary peacetime conditions. Time has been lacking. But we must make better use of available time and of every opportunity to inspire the new officer by example, performance, and, if possible, by personal contact.

How many of these newly commissioned officers will desire to make the Marine Corps their life's work after this war is not known Many, particularly those who have come into service at a real financial sacrifice, will probably desire to return to civilian life. This is perfectly natural and as it should be, but let it be hoped that as each one separates from the service, it will be with regret, and with nothing but respect for his fellow officers and the Marine Corps. Returning servicemen, particularly the officers, will be best qualified to tell the story of the Corps to the American public. As the inevitable reaction sets in against service expenditures, they will be in a position to explain to those in civilian life the necessity for a strong, well-balanced Marine Corps. If regular Marine Corps officers permit any sizable number of them to return to civilian life with anything but a saga of loyal cooperation, efficient performance, and unwavering devotion to duty, they will not have measured up to the trust reposed in them.

The relation between the regular officer and the reserve is chiefly a question of morale. Morale is the sparkplug of performance; it is that something which makes a football team rise to unexplored heights; it is that motivating impulse that makes a Marine unit invincible; and its being rests squarely on the officer personnel of any service. Nothing so stimulates morale and team spirit as the knowledge that a person is on a winning team, playing alongside of capable, loyal teammates in whom complete trust can be placed.

Maintaining Morale in Rear Areas

Morale is particularly a problem at shore stations in the United States and at many of the rear areas outside the continental limits. Everyone would naturally like to be on the line, actually pitted against the enemy, but the "firing line" could not long survive if it were not for the backing it receives from the rear areas, and from eager reserves ready and waiting for a chance to move up. Units engaged in active fighting find that teamwork becomes second nature; everyone must of necessity do his full part to make things go, and morale is high. It is difficult to get and keep team spirit in shore bases or on duties far removed from the excitement and pressure of game conditions.

It is here that the experience of the regular officer can do so much, in his contact with these new officers, to point out to all hands by example and indoctrination that the work, of whatever nature, is part of the whole, integrated effort. Alertness, efficient performance, and continued application are vital in all bases, stations, or assignments. A team is no stronger than its weakest player, or the reserves on the bench. Wherever Marine officers are serving, they are part of the fighting team and there can be no slackening of effort or interest at any place along the line if the services are to maintain the present winning pace.

When officers are on duty far from the scene of the ball game, they should be preparing themselves during every available minute for the day when they will be called forward to run with the

ball. Regular officers must take the lead in carrying out this most important assignment. Not only must they do an excellent job in their particular field; they must also stress the need for constant study and development for future responsibilities.

The Regular Marine Corps Officer, grounded in the customs and traditions of the Service, holds a position analogous to that of the returning letter man or varsity player, while the young man entering the Corps, fresh from civilian life, can be likened to a freshman trying out for the team. The newcomer cannot be expected to take on or assimilate the performance of the varsity player on his first day, week, or month. Experience, coupled with intelligent direction of effort, is mandatory. To whom should the newly commissioned officer look for guidance, assistance, and proper direction but to the regular? Morale does not "spring full flung from the foam" as did Aphrodite. It is a gradual growth based on respect, loyalty, and a feeling of team spirit. The gradual welding together of varsity player and rookie in any football team can be watched from week to week as a season progresses. The identical thing is constantly happening in our Service; regular and newcomer, on the same team, the Navy team, develop more cohesion, dash, and team play with each passing day.

Complete mastery of all things, military or naval, is reserved for only a few, but mastery of fundamentals and of particular specialized parts of the integrated whole falls to this, that, or the other person. We can't all be quarterbacks, ends, or tackles, but if our particular talents point to one of the eleven positions on the team and we are needed there, it behooves us to make ourselves the best center, guard, or halfback on the squad so we can play on the team, to help that team win.

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What's New

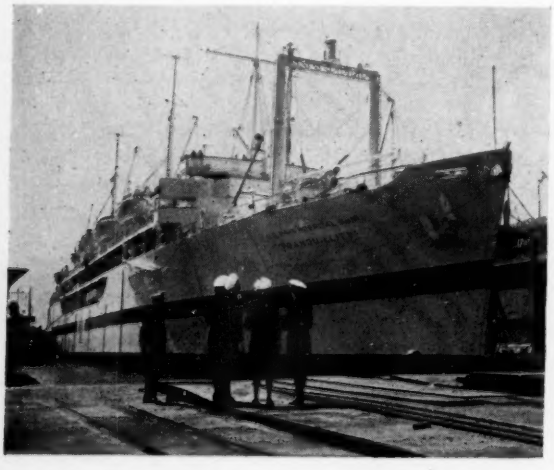
Trends of Military Interest.
By T/Sgt. Ray Moulden

¶ A new Thunderbolt, P-47N, with a 1,000-mile combat radius and better than 450 mph speed, is now in production, just 56 days from the drawing board. The Army discloses that the new airplane is designed primarily as an offensive fighter but can be used also as a fighter-bomber or an escort plane on long-range bombing missions. The revised craft is powered with a Pratt & Whitney engine and its armament includes eight 50-caliber machineguns, 10 five-inch high velocity rockets and two 500-pound bombs. Republic Aviation Corporation developed the plane for the Air Tactical Service Command.

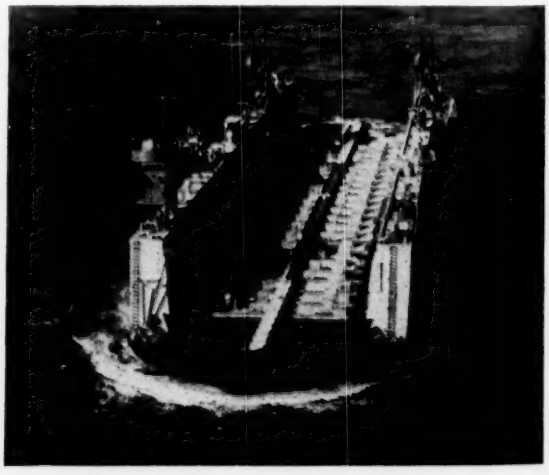
¶ Complete information on the V-2 rocket developed by Germany for use against Britain became available with the overrunning of European launching areas. The weapon is made of light metal, is six to seven feet in diameter, tapering at nose and tail, and weighs about 13½ tons. Costing approximately $50,000, the weapon contains a four-foot deep compartment for radio controls. However, it was definitely determined that direction of the rocket from the ground after flight begins is impossible, primarily because of the extreme speed of the projectile. The V-2 does not need a launching ramp, being fired by standing it on its fins and discharging the affair by electrical impulse. Altitude and direction are set beforehand by dials and gadgets in the radio compartment and the master radio maintains the rocket on its approximate course.

¶ A rocket shell of six-inch caliber, weighing 120 pounds, with a 40-pound war head was to have been used by Germany from sites near Calais, raining explosives on Britain at a rate of 10 a minute, so as to keep all rescue workers, firefighters and others pinned down while larger missiles such as V-2s did primary damage. The new rockets were never launched, our forces overrunning the launching site when it was 80 per cent completed, according to British Royal Air Force experts who recently examined the sites. Day and night attacks were to have been launched from batteries of 50 long-range guns with 40-foot barrels, the batteries located 350 feet underground, with the guns set in deep inclined shafts.

¶ A fireboat, which pumps huge quantities of oil into Jap caves, the oil being then ignited by gunfire, has been used successfully by our amphibious forces in the Philippines. It was first used as last resort against mortar pits on a small island off Corregidor after 10 days of every other brand of attack had failed. Constructed in three days by the Army's 113th Engineers, the fire boats' main weapon is a huge centrifugal pump with multi-thousand gallon an hour capacity, plus oil tanks and 1,000 feet of pipe. The boat was brought to the shore, the pipe laid down a ramp and up a hill toward the mortar pits, while foot soldiers pinned down the defenders with grenades. After a quick test with sea water, a mixture of one-third gasoline, two-thirds diesel oil was spewed into the pits and mortar shells and tracers set it afire. The whole area erupted in flame, detonated ammuni-



The Tranquillity is the first of five new and modern hospitals for Navy's "mercy fleet."



A self-propelled floating drydock made of concrete is a Naval auxiliary repair unit.

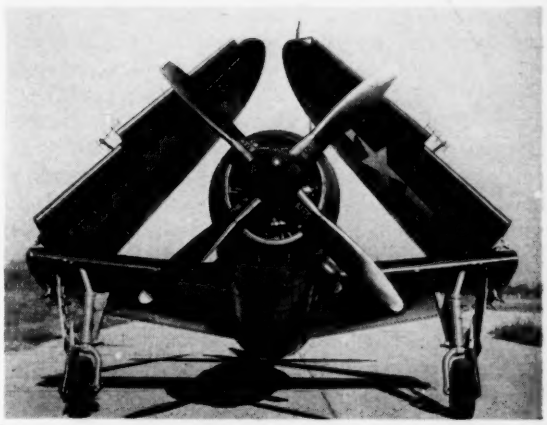
tion and HE, and field reports said the fire was effective even down to the lowest levels of tunnels beneath the pits.

¶ Use of whole blood on Iwo Jima instead of plasma is claimed by the Navy to have forestalled a death toll of at least twice the 4,189 Marines and Naval personnel killed on the island. The blood was flown in from Stateside donation centers, 14,000 pints being used, about half administered on the field and the rest in hospitals and on shipboard.

¶ British airplane manufacturers have reported they are at work on a giant bomber similar to our B-29. Plants turning out the British Lancaster were said to be engaged in the project, no details of which are known.

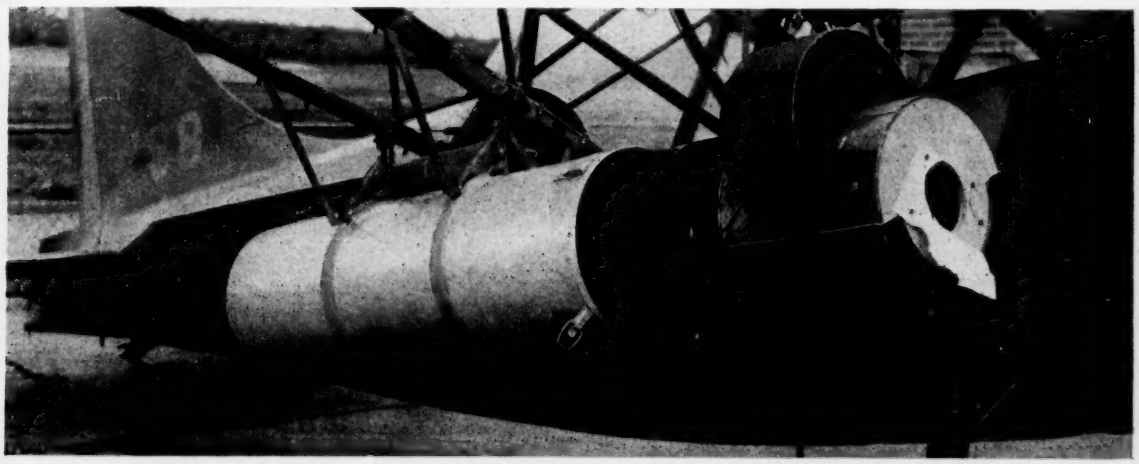
¶ The Navy has disclosed use of two new rockets which add materially to American fire-power. They are the spinner and the high-velocity aircraft rocket (HVAR), both developed by the California Institute of Technology. The spinner was first used on Iwo, while the HVAR was tested in Europe last summer. The spinner is a large-size version of the 4.5-inch beach barrage rocket used by Army and Navy for some time in amphibious landings. It is stabilized by rotation in flight similar to gun-fired projectiles, instead of fins, the spin being induced by angle discharge of gases from the motor's end piece. The HVAR was used in Normandy, launched from Army P-47s against locomotives, tanks, armored vehicles and gun emplacements. It has since been used with good effect against Japanese industrial centers and the Navy states that from planes it develops sufficient velocity and precision to penetrate and knock out pillboxes.

¶ American observers in Moscow over May Day witnessed some of the world's heaviest artillery, including huge, two-section, tractor-drawn howitzers and mortars which appeared to exceed even the long-secret 360-mm pieces the Soviet armies are said to possess. These howitzers easily are larger than the German "Satan," and surpass the Russians' giant siege guns and rifles. One observer said that from 60 yards distance, the Soviet howitzers bear about the same relation to American 240-mms that a highball glass bears to a whiskey jigger.



This is the new, more deadly model of the Navy's carrier-based SB2C dive bomber.

¶ General Electric has released details of its newest repeating photoflash camera now used by most services in night aerial reconnaissance missions. The repeating flash tube shoots successive flashes of light earthward, each as brilliant as a bolt of lightning. The tube is plugged into one of three electronic devices, backed by an auxiliary system which piles up tremendous electrical energy and results in a blinding explosion of light when suddenly released in the tube. So great is the heat from the thousandth of a second flashes that a steady blast of air must be forced through the jacket to cool the coil. General Electric forecasts post-war use of the flashbulb for lighthouse and airway beacons.

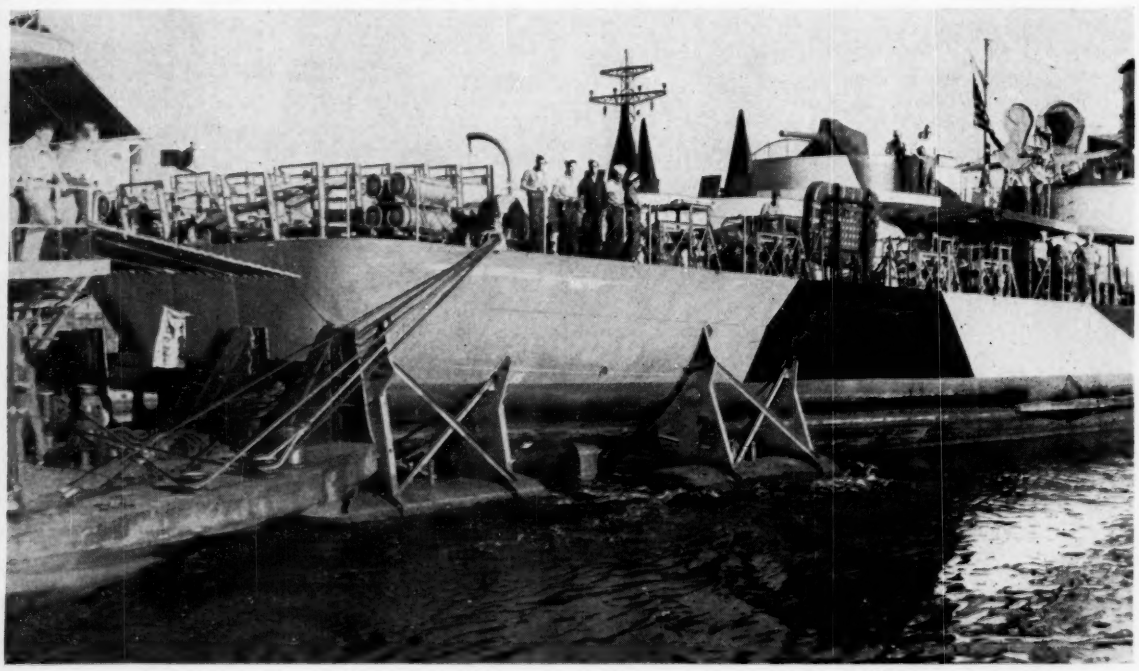


Containers such as this one fitted beneath the wing and next to the cockpit of an L-5 plane hold the telephone wire which can be laid by wiremen in the air.

¶ Army Air Forces "fourth echelon" is servicing and repairing aircraft at sea from special craft under command of the Army Transport Service, manned by merchant marine crews and staffed by Army and Navy armed guard details at twelve 20-mm, two 40-mm antiaircraft guns, one 3-inch all-purpose and one 5-inch weapon. The ships carry their own landing barges and motor sailers on deck with amphibious ducks and tractors, jeeps, and trailers. On a special flight deck a helicopter is carried, specially designed to spot planes downed in remote regions and to carry personnel and parts needed for repairs. Radio equipment enables details sent ashore or on scouting missions to maintain constant contact. Each vessel is also equipped with the following shops: machine, welding, sheet metal, heat treating, electroplating, ordnance, turret, ground and airborne radar, radio, camera repair, propeller, carburetor, turbo- supercharger, electrical, paint-dope-fabric, woodwork, instrument, bombsight, tire, fuel, cell, parachute rigging and drafting. There is also a plant for generation of pilots' oxygen. The ships, adapted from Liberty-type vessels, carry 400 fully trained mechanics each, and even include deep-sea diving apparatus and personnel.

¶ Electric instruments are now sealed hermetically against fungus, humidity, water, dust, and other adverse conditions through a special strain-free glass window, fused to a metal ring in a glass-to-metal seal. This is then fused to a steel case by a soldering joint. Glass seals, soldered joints, and the metal ring form a completely hermetic enclosure for the instrument, according to General Electric engineers who developed the process. Instruments so protected have been successfully submerged in 60 feet of water for several days, suddenly transferred from a temperature of 67 degrees below zero to 185 degrees above, subjected to dust storms and other tests, all without damage. General Electric has also perfected a means of detecting presence of water drops in ships' ventilating systems using a simple pipecleaner, a standard electronic relay and electrical connections. When resistance between the two wires of the pipecleaner is reduced because of moisture, the relay operates, showing the presence of unwanted water in the lines.

¶ The Navy's newest and most radical floating drydock is an advanced base sectional type, in which 10 separate units or barges are joined together to form a repair dock that can accommodate a battleship. When assembled, the separate barges form a surface nearly as long as three football fields, and with side walls rising higher than a five-story building. According to General Electric, whose engineers cooperated in the electrical design of the drydocks, each of the sections has a lifting capacity of 10,000 long tons, equivalent to a fleet of 7,500 automobiles. An assembly of seven such sections will accommodate a cruiser. Electricity for the sections, each of which is complete in itself, as well as containing living quarters for the crew who man and operate the barge, is generated by diesel-driven generators on each section. This power operates machine tools, cranes, welders, anchor windlasses, hoists, blowers, compressors, ventilating and refrigerating units, and pumps for



Air-filled gas drums become pontoons to lift and protect the sterns of sea-going vessels that are pushed down the river from the Great Lakes to New Orleans.

A wounded man can be carried in a tank such as this one inserted beneath a P-38.

American soldiers examine a "screaming meemie" launcher captured in Germany.

emptying and filling buoyancy compartments. Sectional drydocks are towed to protected locations and there assembled for operation. Their latest repair equipment enables them to overhaul warships in a short time and send them back to permanent bases under their own power or put them back into the battle.

¶ A new rocket-propelled bomb conceived by the British Admiralty which will penetrate 20 feet of concrete is being used by Flying Fortresses of the U. S. Eighth Air Force. The projectile was developed when it was found that gravity alone generates insufficient power to give a bomb piercing qualities against heavy emplacements. The speed developed by the new rocket-bomb is greater than sound or more than 1100 feet a second. With the fuse set to explode after deep penetration, it is carried at normal flying altitude and aimed with the usual sighting technique.

¶ Congressional hearings, published officially, disclose a new chemical torpedo developed by the Navy. No details are available, but it is presumed the chemical quality modifies the steam-turbine propulsion systems now in use.

¶ General Electric Company has developed a lightweight bazooka, 42 per cent lighter than the standard model, with a new "eye" sight and capable of handling as easily as an M-1 rifle. The new rocket launcher is more accurate than the original, weighs but 10½ pounds and is made of aluminum, very thick, instead of steel. This seventh basic design in the bazooka series has an optical sight on a folding mount, permitting unrestricted vision when leading fast moving vehicles such as tanks. The greater accuracy now possible has resulted in bazooka sharpshooter qualifications, for which a medal is now awarded. General Electric has also replaced the dry cell batteries with impulse generators on the launcher.

¶ The Navy's four motored flying boat, the Coronado PB2Y-3, has been modified into a rescue and hospital airplane, using jet-assisted propulsion for takeoff from heavy seas and small lagoons where hitherto such large ships have been unmanageable. The new designation for the converted plane is PB2Y-5H, and the Vultee Aircraft Corporation is turning them out in quantity at San Diego. Space is provided in the two-story hold for 25 litters, while food, hot drinks and medical care can be administered to casualties immediately after they come aboard. In addition to JATO, the craft have new 1200 horsepower Pratt & Whitney engines, more powerful and economical than heretofore. From Pearl Harbor they can reach the mainland in about 12 hours with wounded, and transport several tons of cargo back to the islands on return.

The following list shows the source from which each picture in this issue was secured. All pictures not credited are either official Marine Corps or Navy photos.

Page
4, 5, 6, 24, Coast Guard
7, 8, 9, 10, 11, W. H. B. Smith
40, 41, British Information Services
44, 46, U. S. Army Signal Corps
59 (top), Curtiss-Wright; (bottom) U. S. Army Air Forces
60, U. S. Maritime Commission
61 (left), U. S. Army Air Forces; (right) U. S. Army Signal Corps

Total Destruction on Wotje Island

Air photo interpretation officers, with an exact knowledge of Wotje and its installations, briefed pilots so well that this base was wrecked. ***By Captain Ellis F. Trefethen**

WOTJE ISLAND, once a strongly fortified and heavily wooded few hundred acres of land, has been turned into a jumble of bomb craters and debris by constant attacks by Fourth Marine Air Wing planes under the command of Major General Louis E. Woods.

Photo interpretation officers, who know the island as well as they know the palm of their hand, briefed pilots on the exact location of the targets. The first raid was made on September 16, 1944, when 38 Marine Corsair fighter-bombers and 39 Douglas dive-bombers dropped more than 76,000 pounds of explosives on the command area, blowing earth away from the revetted structures and piling up wreckage. On three succeeding days the island was struck with additional vast loads of bombs.

Photographs disclosed that the concentrated strikes had caused the following damage: The Jap island command post had been swept by fire; at least five food dumps, precious to the Japs, were destroyed; the home of the commanding officer and one of his shelters were blown to bits; the officers' shelter area suffered many direct hits and was swept by fire; the radio station sustained several near misses, a concrete blockhouse was damaged.

*Marine Corps Public Relations Officer.

As Wotje looked at the start of the raids.

A close view reveals what Fourth Marine Air Wing raids did to Wotje in six months.

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Amphibious Strategy

(Continued from page 6)

where it was. The battlefield was effectively isolated, and the Germans could neither mount an early, nor a strong counterattack. Our air mastery also prevented the enemy from gaining necessary intelligence about our movements. Bad weather made the arrangements complete.

The short distance between staging base and point of attack permitted most of the landing craft to sail directly to the attack. Moreover, beach conditions, tides, topography, road and port capacities, and the general outlay of the enemy's defenses were well known. Hence thorough, detailed, and coordinated planning was possible. If a major reason is sought for the success of the Normandy landing, it is surely the perfect coordination between all branches of arms and the fact that all weapons could be used. Yet without the brilliant mechanized breakout at Avranches, made possible by the timely capture of Cherbourg and the tactical support by heavy bombers operating from near fields, the Normandy landing could have easily suffered the fate of the Dardanelles operation, or worse. Sea and air power and amphibious techniques create only the conditions of victory which must be won by land power.

Amphibious war against Japan is technically a more difficult undertaking than the landing operations in Europe. The reasons for this are threefold: Japan entered the war as a strong sea power, being in strength hardly inferior to the U. S. Pacific Fleet, if at all; Japan possessed moreover the strongest naval air power on earth, which almost everywhere in the Western and Central Pacific could be supported by land air power. Through the construction of numerous coastal defenses and naval fortresses all over the Pacific in areas relatively unknown to us, the enemy had well prepared himself against amphibious attack. Yet the greatest obstacle against effective attack on Japan was and still is the wide expanse of the Pacific Ocean. To overcome these difficulties, the U. S. Navy devised a new naval strategy, which integrates surface, subsurface, air, amphibious, and land action.

Frequency of Landings Never Equalled

At the time of this writing, the U. S. Navy has supported in the Pacific more than 60 landings, carried out almost 50 task force strikes and fought more than 10 battles. The frequency with which the Navy undertakes major fleet operations has never been equalled, let alone surpassed, in previous history. The naval offensive in the Pacific is virtually uninterrupted. It is one single permanent offensive which hitherto suffered no setback and

(Continued on page 68)

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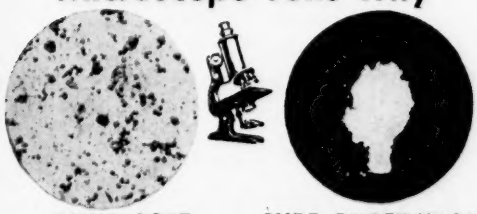

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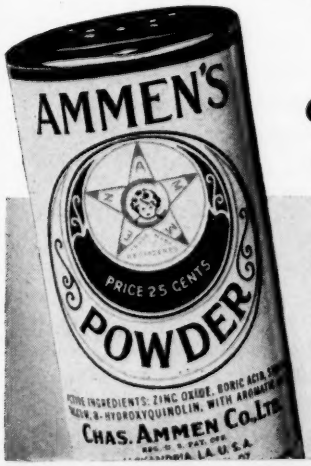

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(Continued from page 66)

which only paused, but never stopped in its forward march.

The aims of our Pacific amphibious strategy are the elimination of Japanese sea power, the crippling of Japanese air power, the weakening and splitting of the Japanese army, and the deployment of our triphibious forces in bases suited for the final attack on Japan. The great number of our amphibious victories is beginning to produce cumulative effects. While our offensive power continues to grow, a rapid decline of Japan's defensive strength has set in. In the fight for island positions which the Japanese could not afford to lose, but which they were unable to hold, we have established full command in Pacific waters, air mastery over the greatest parts of the Far Eastern fronts, and are beginning to gain air supremacy over Japan proper. Thus, two of the essential conditions for the final assault on Japan have been created.

Amphibious warfare forms also an integral part of our land war against the Japanese army. In the course of our amphibious operations a considerable number of Japanese ground troops were annihilated. Moreover, large Japanese formations were nailed down to isolated positions, from which they can neither retire nor attack. These isolated troops have as much been eliminated from the war as though they were prisoners. Amphibious warfare

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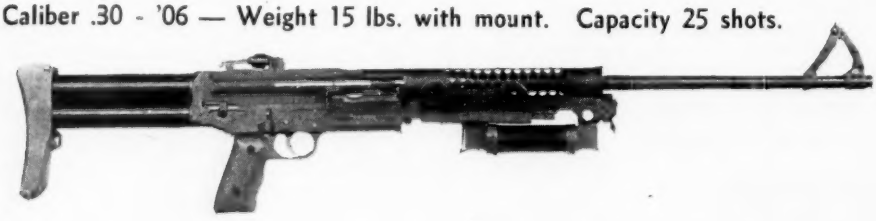

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facilitates the application of the basic tactical rule that the enemy is best beaten by attacks against his flanks or his rear. Time and again our mastery of the sea permitted us to outmaneuver and encircle Japanese troops in the style of Cannae or Waterloo, while it also prevented enemy forces from mutually supporting each other. To illustrate the situation, we may visualize an army of five divisions drawn up for battle. As if by magic, this army is completely immobilized; it can neither advance, nor retreat, nor move sideways. A single division attacking from the flank can never be opposed by more than one battalion which it will annihilate, only to proceed to the annihilation of the next battalion. In the end, one division would have annihilated five enemy divisions, without even suffering great loss. This is, schematically put, the situation that prevails in Pacific archipelagoes. Such are the advantages of amphibious warfare carried out in a completely commanded sea.

There is no necessity to discuss the traditional features of our naval strategy, although it should be understood that without revolutionary improvements in all details of naval technology and tactics this strategy would never have become a practical possibility. This refers above all to naval gunnery, to the air protection of warships, particularly of carriers, the quality of naval aircraft and the creation of new types of warships.

The almost irresistible power of our amphibious attacks is due to the ability to divide our naval forces into two major and independent task groups: The first group contains new battleships, fleet carriers and cruisers, and so on, and is used as a strategic cover, to fight off any attempt by enemy surface or air forces to oppose landing operations. The second group consists of old battleships and other old surface ships plus escort or light carriers, and is used for the tactical support of the landing and ground fighting, as well as for the protection of communications.

Overcoming the Strongest Fortresses

It is this naval power—concentrated above all in heavy guns—and its effective teamwork and close tactical cooperation between the surface, subsurface, air and auxiliary arms of the Navy, and between the floating Navy and the Marines, the Army, airborne troops and the Air Force which has enabled our forces to break through coastal fortifications, to overcome, by frontal assault or maneuver, the resistance of the strongest fortresses to be found anywhere in the world, and to carry out a permanent amphibious offensive on a front of several thousands of miles. Teamwork between different arms is one of the most difficult military problems and one which was never solved to a degree even resembling the present perfection. This accomplishment is based upon adequate training and the efficiency of our signal communications. (It may be recalled that poor communication devices

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were the main reason why the German Navy escaped in the battle of Jutland.)

The example of Corregidor may illustrate the proficiency of American amphibious warfare. In 1942 the Japanese took the island fortress after four months of bombing and after almost one month of heavy shelling. Their losses during the landing are estimated at 5000 killed and 3000 wounded. Many of the casualties were inflicted through the sinking of landing barges. In 1945, our air forces bombed the island for approximately three weeks with more than 3000 tons of bombs; surface forces shelled the island for three days. The assault was launched, after an intense low level bombing and strafing attack, by parachutists and forces landing from the sea. In that operation, 3000 American soldiers attacked 6000 Japanese and took the strongly fortified rock at the cost of 136 killed and 531 wounded. Such is the value of coordination and mutual support.

The Corregidor operation was conducted at very close range. The greatest technical accomplishment of the U. S. Navy is, however, its ability to support landing operations at long distances. The U. S. Navy possesses a sea-holding capacity unequalled by any fleet in modern times. Its striking range extends over many thousands of miles.

Ever since warships have been mechanically operated, the effective battle range of a fleet has been very short. The Imperial German Navy, for example, was restricted to the North Sea. The range of the British Navy is sufficient to permit movements from one of the ubiquitous British naval bases to the other, but does not permit offensive operations across wide oceans. The U. S. Navy, however, has operated for extended periods without returning to port.

This accomplishment was made possible by an entirely unprecedented system of logistics, by an organization which, in Secretary of the Navy Forrestal's words, provides the right things at the right place at the right time. The mainstay of our naval logistics is the Fleet Train. There are precedents to the Fleet Train as an organization for emergency supplies. Yet there is no precedent for the U. S. Fleet Train in all its functions, for it is much more than a mere supplying unit. The Fleet Train is, in fact, an entire floating naval base with dock yards and requires itself the support of an elaborate logistic system, comprising fast transports and cargo planes. By using methods of prefabrication and assembly, the Train can repair and modernize warships and effect major repairs on major ships, with the exception of very serious battle and collision damage. Large warships can be drydocked during war cruises. In addition, the Train provides the fleet with food, clothing, ammunition,

(Continued on page 72)

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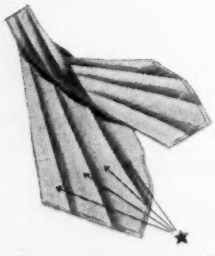

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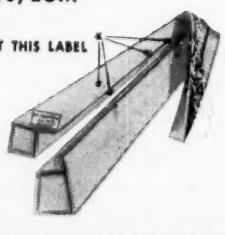

The tie when finished and folded is bartacked at the side. This unique construction makes it easy to wash—press the tie—and retain its original shape. There is no lining to wrinkle or buckle, such as is found in all ordinary tie construction.

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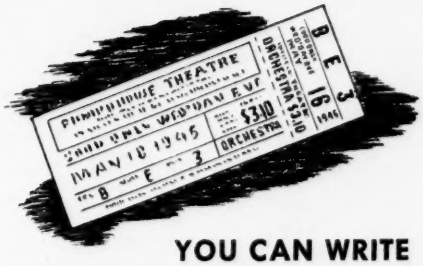

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(Continued from page 70)

fuel, aviation gasoline, hospitalization, and even recreation facilities.

Without the Fleet Train, many damaged warships would be lost while returning to Pearl Harbor or the United States. Moreover, so much time would be lost that the striking power of the fleet could not be maintained. The naval bases would be overcrowded, hence repair would be done very slowly and the supplying operations which depend on these bases would clog down. The Fleet Train therefore is the reason why the U. S. Navy can sustain its offensives for long periods of time, operate at great range, and maintain its speed, fire power and fighting trim even after prolonged operations. Without the Fleet Train, the U. S. Navy would not have crossed the Pacific.

How the U. S. Navy gained command of the Pacific and destroyed Japanese surface power in the battles of Coral Sea, Midway, Guadalcanal, Philippine Sea, Leyte Gulf, and off Kyushu, thus creating one of the major conditions for the attack on Japan, need not be retold. It is a less well known fact that the U. S. Navy also defeated Japanese air power. Contrary to widely-made predictions that the Navy could not maintain itself against Japanese land and island based air forces, nor cross the Pacific in the face of the enemy's network of air bases, the Navy developed a successful technique to knock out Japanese air power over designated areas, preparatory to, or concommitant with, amphibious assaults.

The Navy's offensive of attrition against Japan's air power is conducted by all naval arms against the weapons, bases, logistics, personnel, and replacement facilities of the Japanese air forces. The carrier task force strike is the most effective form of naval attack against land air power. The carrier task force is a tactical unit without historical precedent. It is a flexible organization quickly and effectively adaptable to its mission and to the changing conditions of battle. It permits simultaneous fleet operations of a diverse nature along a very broad front. It is capable of fighting any fleet action, of compelling the enemy to accept battle, and of damaging the enemy during retirement. Most important of all, the carrier task force is a *strategic* air force which, on account of its unparalleled mobility, can be thrown in full strength against *tactical* targets. The importance of this tactical innovation cannot possibly be overrated. What the plane-tank team means for land warfare, the task force means for the war at sea: mobility and long range striking power.

The task force steams close to an enemy base to launch surprise bombing attacks against the airfields and destroy enemy aircraft on the ground

(Continued on page 74)

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"We in the Bell System now furnish the networks for radio and we'll be on the job with networks for the transmission of television, too.

"Those networks may be of wire or coaxial cable or micro-wave radio-relays.

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BELL TELEPHONE SYSTEM

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(Continued from page 72)

and in the air. In addition, fuel and ammunition dumps are set afire, ships are sunk, and a blockade is established so that the enemy cannot replenish the arsenals of his air forces. Naval planes are helped by land based planes and by ships' gunfire.

Our carrier based aircraft showed themselves superior to Japanese land based planes. Yet the success of carrier planes is due above all to their effective tactical use: the enemy is hit surprisingly in such rapid succession that he is destroyed before he can recover. To give an example of the effectiveness of these operations, we may recall that between August 24, 1944, and January 26, 1945, Naval planes destroyed 4,370 enemy aircraft in the Western Carolines and in the Philippines; between March 18, and April 18, 1945, 2,596 enemy planes were put out of action in the Ryukus. U. S. carrier task forces also all but wiped out Japan's naval air power.

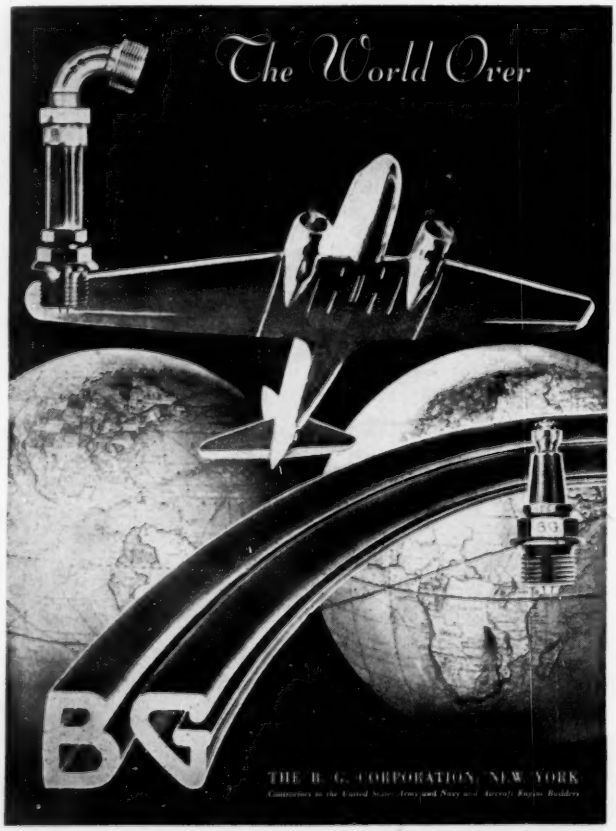
Enemy air bases are neutralized by systematic air attack and surface shelling, or are taken by amphibious attack. Thus, the enemy's network of air bases—after the destruction of his fleet, his first line of defense—is rendered ineffective. Simultaneously, we build up an offensive network of air bases, getting Japan within the range of our strategic bomber forces.

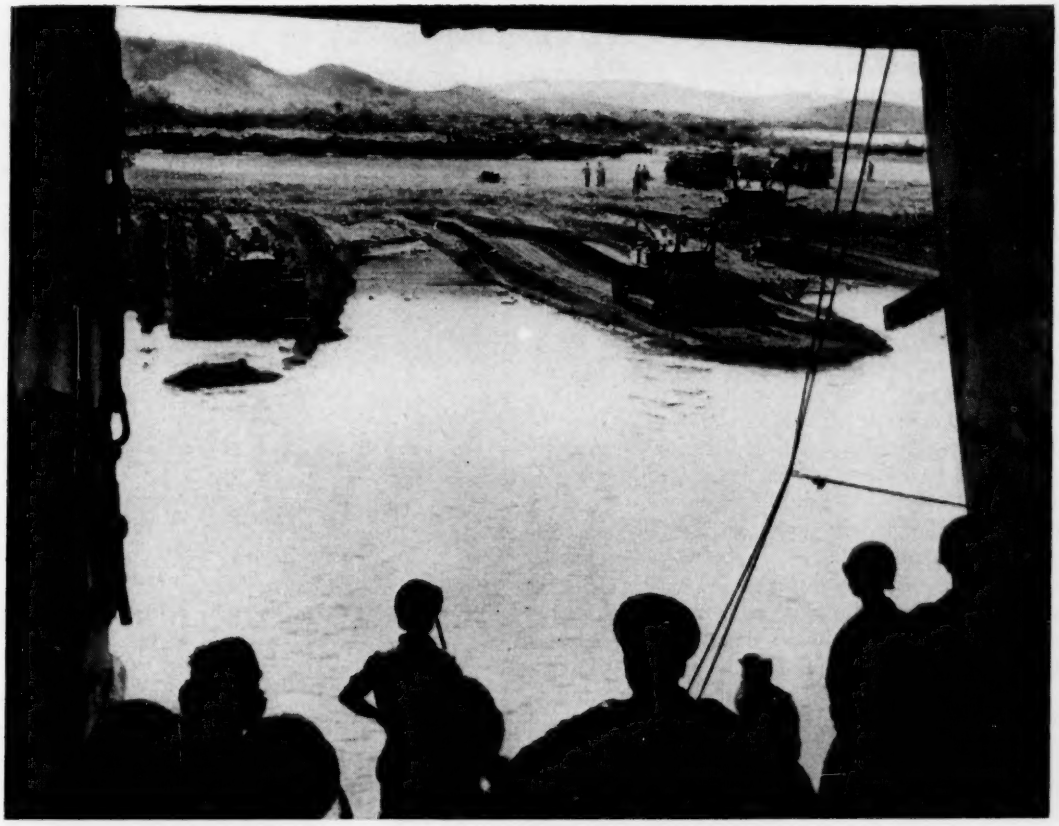
The offensive of the heavy bombers depends on maritime supply lines which the Navy protects against Japanese interference. At the same time, Japan's maritime traffic is destroyed by carrier strikes and fleet penetration into Japanese waters, as well as by blockade, entrusted to submarines and planes operating from a series of airfields flanking the enemy's supply lanes. The bombing of enemy ports and unloading facilities also serves to reduce the performance of Japanese supply services. The over-all result of these operations is not only that the enemy's home war industries are increasingly rendered anemic, and that materials necessary in aircraft construction are no longer available in desired quantities, but that the logistic organization of Japan's air bases is breaking down. Blockade and antishipping offensive also interfere with the fuel supply of the air forces (and of other military forces, for that matter).

The Japanese Will React Strongly

Japanese aircraft factories have been brought under attack by heavy land bombers and by naval aircraft. In the future the frequency of our carrier strikes at Japan will presumably increase. It may be recalled that carrier strikes were directed against the Philippines until Japanese air power in that

(Continued on page 77)





PUTTING OUT THE "WELCOME" MAT

After the first beachheads were established on Leyte, the tanks and troops that followed landed much faster and more easily. One reason was the work done by "Caterpillar" Diesel Tractors.

Rumbling ashore as soon as the beach was taken, the drivers lowered their bulldozer blades and tackled the job of building earth ramps out into deep water. By the time the fleets of LST's began to arrive, they had a line of wide, solid roadways extending out from the beach. And the reinforcing waves of men, trucks and tanks moved down the gangways of the ships directly to dry land.

This is one of the myriad war duties handled by the tough "Caterpillar" Diesels of the Seabees and Engineers. The men who use them so capably know what they can do and swear by their rugged power and day-in-day-out dependability.

When victory is finally won there will be no lack of opportunity for such men and such machines in the big earthmoving jobs of peace.

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(Continued from page 74)

region had been rendered impotent—and then the landing on Leyte begun.

The Japanese will be forced to react strongly to our fleet attacks against their home islands. This will result in extreme pressure on their personnel replacement facilities—a pressure which already has made itself felt in the past. Although the Japanese will remain able to provide quantitative replacement for their losses in flying personnel, it is questionable whether the enemy can still set aside enough time for the proper training of his flyers. Since we were not compelled to shorten the training of our pilots, and since training is one of the chief factors on which the value of an air force depends, the enemy will be incapable of preventing the annihilation of his air force. Once the isolation of a beachhead in Japan through strategic bombing will have become feasible, the Pacific war will have entered its final phase.

Thanks to the perfection of our amphibious or triphibious technique, war is being effectively fought at greater distances than ever before in history. The crossing of the Pacific ranks with the greatest military accomplishments of our time. It is a feat which our enemy could not achieve and which he believed we would be incapable of achieving. Admiral King was amply justified when he exclaimed: "Today, we are truly writing the naval textbooks of tomorrow." —END

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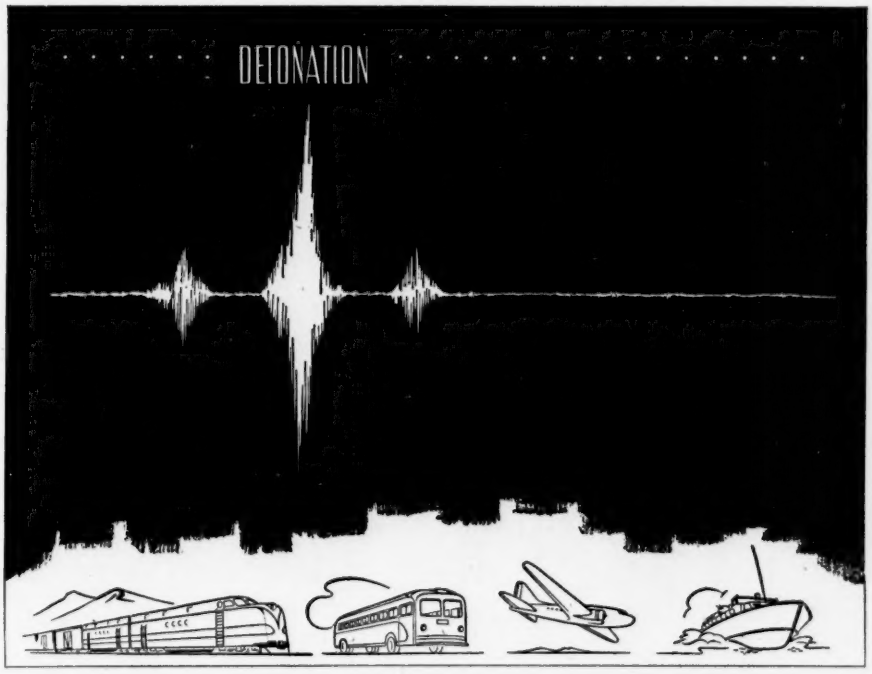

How electronics helps tell a knock from a boost...

THE MIT-Sperry Detonation Indicator is an engine instrument that discriminates between normal and abnormal combustion.

Through an electronic pickup, it *instantly detects detonation*—popularly called knocking or pinging—in most types of internal combustion engines. And it gives *immediate evaluation of detonation.*

As a result, warning is given at the time trouble *starts* . . . engine life is lengthened . . . mixture may be adjusted so that considerable fuel is saved . . . and the period between engine overhauls is extended.

No piercing of engine cylinders is required. Yet even the slightest detonation is signalled visually, and the faulty cylinder or cylinders spotted.

Use of the MIT-Sperry Detonation Indicator on airplanes results in remarkable fuel savings, longer engine life, greater safety.

The same is true of surface transportation which employs internal combustion engines.

Engine manufacturers find this instrument an invaluable aid in designing and testing. It also permits development of fuels exactly fitted to engine characteristics, thus increasing power output and lowering fuel costs. Also with the Knockometer, a special application of the Detonation Indicator, fuels with superior anti-knock characteristics can be developed and their quality production controlled.

Since 1937, Sperry engineers have been working on the perfection of a detonation indicator. This is but one of the many fields in which Sperry has pioneered in the field of electronic development.

Additional information on the MIT-Sperry Detonation Indicator is available on request.

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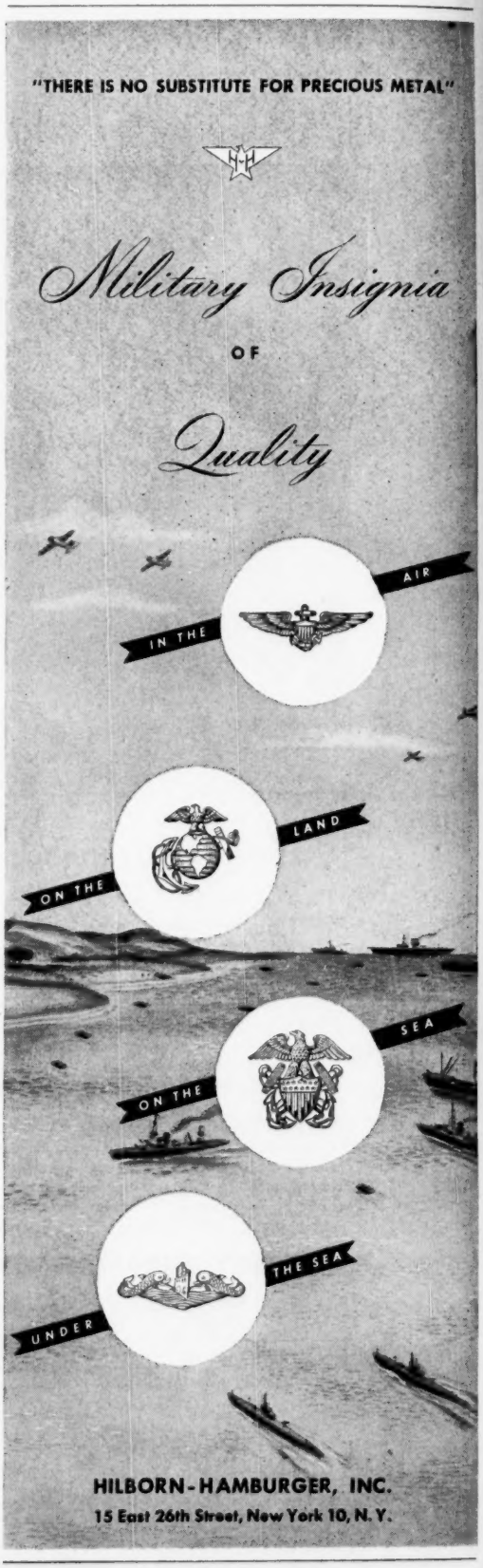

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Platoon Commanders' School

By Major D. V. McWethy, Jr.

IN RECENT months Marine Corps policy regarding selection of men for officer training has changed. Rapid expansion of the Marine Corps early in the war made it necessary to obtain qualified civilians to attend Officer Candidates School and Reserve Officers School. Recent policy, however, has been to select men for officer training who have been in the Marine Corps at least four months.

Since such men already have some military background and to avoid repetition of previous instruction, the two schools, Officer Candidate and Reserve Officers were combined on December 28, 1944. This new school was named the Platoon Commanders' School. It was planned so that future officer candidates would receive only a concentration of the more practical subjects considered vital to a platoon leader in combat.

The students of the Platoon Commanders' School now include enlisted men of officer caliber who have served overseas and qualify as candidates for commission in accordance with the requirements of Letter of Instruction No. 969; Marine graduates of the Navy V-12 program; and enlisted men who have had no overseas service but have fulfilled the requirements in Letter of Instruction No. 878. All enlisted men in the school have attended the Training Battalion or CRS at Quantico before entering PCS.

Staff officers and an enlisted detachment assigned to the commanding officer of the school are divided into three sections. These are:

1. A headquarters staff which performs the executive staff duties of the first, third, and fourth sections and the special staff functions of mess, ordnance, and legal sections.

2. The instruction department, which is responsible for all tactical, technical, and general instruction presented in the school.

3. The training regiment, into which students of the PCS are organized for the purposes of quartering, mess, discipline, drill, and exercises in other than purely tactical subjects.

The regiment is composed of eight training battalions with approximately 300 men in each battalion. A battalion consists of two companies of four platoons each with approximately 35 students per platoon. The course of instruction at PCS now extends over 16 weeks, with a class graduating and a new class entering every two weeks.

Over 60 per cent of the instruction presented at PCS at the present time is in the form of practical work such as troop leading exercises, tactical walks, demonstration, and terrain exercises in the field. It is the policy of the school to select as instructors only those officers with combat experience who have been through the Instructors' Orientation Course.

Instruction is presented by the standard method of explanation, demonstration, application, examination, and discussion. After the instructor has thoroughly prepared the subject matter, he explains it to the class, telling them what they are to learn and why they are to learn it. If practicable, the subject is demonstrated graphically step by step so as to create a lasting impression. Once the class has been indoctrinated in the fundamentals of the subject, students are given the opportunity to acquire further skill and knowledge by applying the principles learned.

Examination has the twofold purpose of reviewing the essentials of the subject matter and of determining whether or not the student has the requisite knowledge and ability to apply it. Exams take the form of written or oral answers to questions of application or doctrine, or of performance demonstrating certain required phases of drill, exercises, or mechanical technique. The purpose of the discussion which follows the examination is to sum up and clarify the important points of the subject which have been developed by the previous steps. Throughout the course students are observed carefully. If a student fails to attain the requirements set forth for graduation, he is ordered to a special board of review to determine his fitness for appointment as a second lieutenant. The board investigates the case and determines if the candidate will continue the class or be dropped.

The course of instruction includes the following subjects: basic weapons, map reading, aerial photography, signal communications, chemical warfare, combat intelligence, staff organization, law and administration, tactics of the rifle squad, rifle platoon and rifle company, tactics of the machine-gun section squad and platoon, tactics of the 60-mm mortar section squad and 81-mm mortar section squad and platoon, field artillery in support of infantry, landing operations.

Candidates who successfully complete the course are commissioned second lieutenants and approximately 85 per cent are assigned to Marine training commands. The other 15 per cent are assigned to special schools such as artillery, sea, and chemical.

Newly commissioned lieutenants at the training commands receive additional instruction in the troop leaders' school of the Infantry Schools Battalion. In this school the officer receives an eight weeks' course of instruction prior to being sent to a training regiment. This instruction teaches the officers how to set up demonstrations effectively, conduct tactical walks, critiques, and present a running commentary on any problem or period of instruction that may be encountered while presenting instruction to enlisted men. After completion of this course, officers are assigned to platoons in the training regiments and are provided opportunity to work with platoons before going overseas.

Letters of instruction 878 and 969 covering qualifications of candidates for officer training appear on page 18.